ENGINEERING NEWS-RECORD

JAN. 7, 1960

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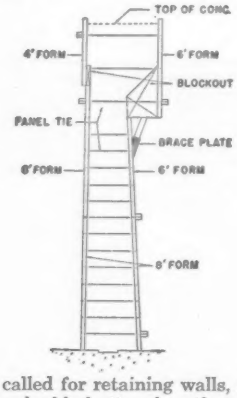
Battered Walls

Symons Forms on St. Louis Expressway

. . . Form Double Battered Walls 12" at Top, 3' at Base

On the downtown phase of the St. Louis Mark Twain Expressway, contractor R. B. Potashnick & J. S. Alberici Construction Company used 8,000 sq. ft. of Wood-Ply and 20,000 sq. ft. of Symons Steel-Ply Forms.



Job called for retaining walls, many of them double battered so that forms were angled to give 12" top thickness and up to 3' thickness at base. Heights varied from 4' to 34'. In addition, the forms were used to pour footings, abutments, piers and beams. Contractor obtained 30 re-uses.

Symons Forms may be rented with purchase option. Additional information on how to use Symons Forms for *battered walls* sent on request.

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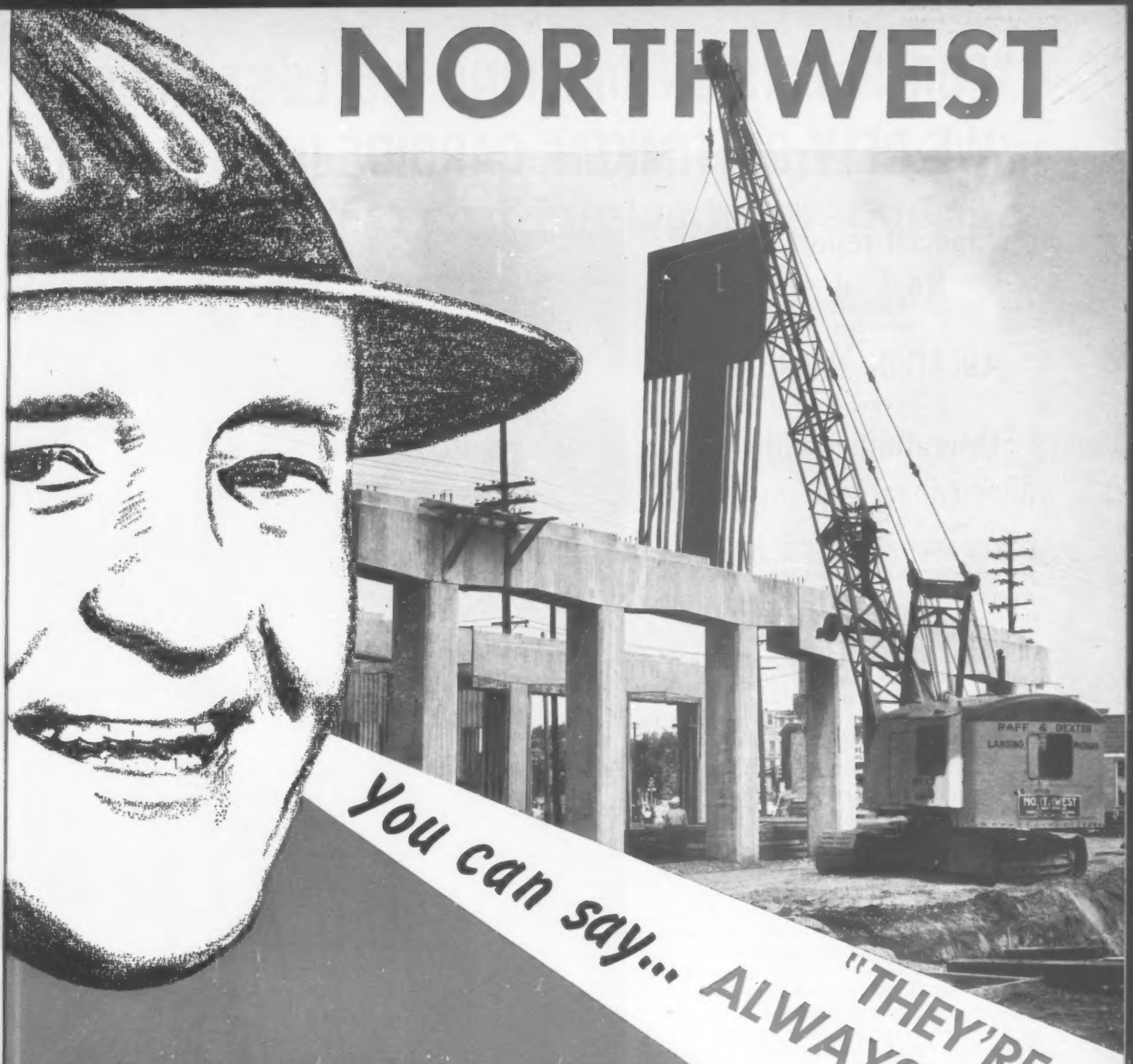

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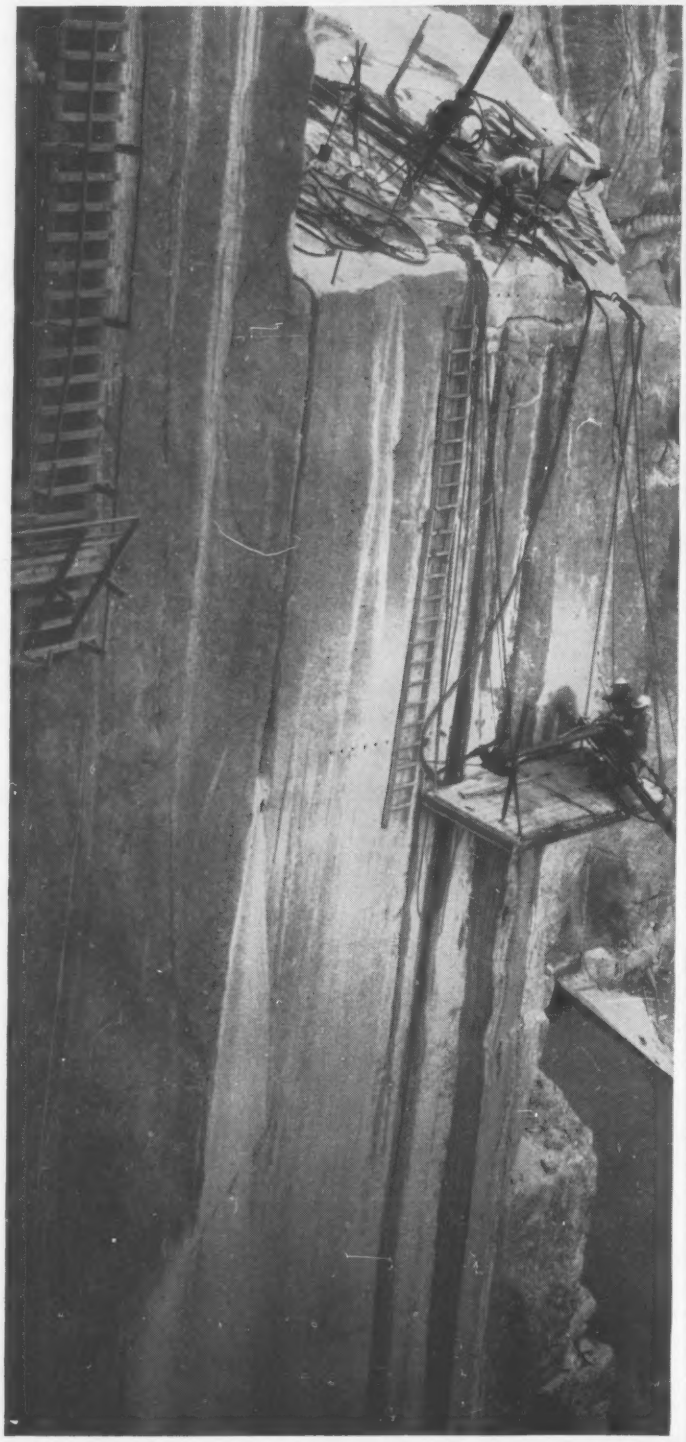

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Independent Tests Show:

Flow characteristics of AMVIT clay pipe permit efficient, lowest cost-in-place sewer design

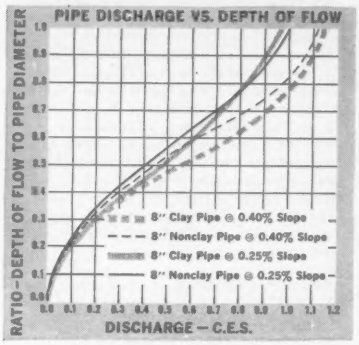
There is no difference in value of Kutter's "n" between different types of pipe materials

There have been many claims and counter-claims dealing with the "n" factor in the Manning approximation of the Kutter formula relating to the flow-coefficient of friction of various types of piping materials.

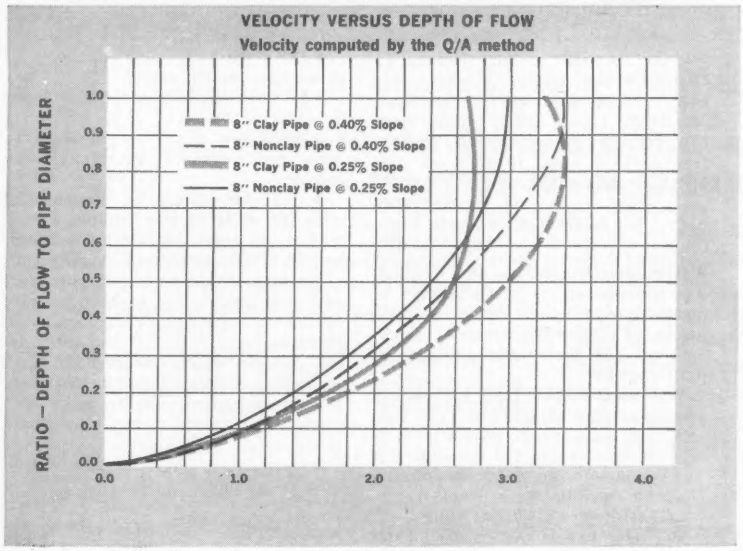
For many years, sewer designers have used the "n" factor of .013 in the design of sanitary sewer systems involving vitrified clay pipe. Recently, the manufacturers of substitute non-clay materials have claimed that the "n" factor for their product is less than .013, usually claiming it is .010.

This supposed difference in "n" factor has been used in the promotion of these substitute materials on the basis that, since their product has a supposedly lower "n" factor, designers must use a different design criteria for clay pipe. *This is only sales promotion talk.*

Studies at the University of Iowa and at Ohio State University have proven that there is essentially *NO* difference in the value of Kutter's "n" between different types of pipe materials regardless of pipe lengths, type of joints or any other consideration.


PIPE DISCHARGE VS. DEPTH OF FLOW
RATIO—DEPTH OF FLOW TO PIPE DIAMETER
8" Clay Pipe @ 0.40% Slope
8" Nonclay Pipe @ 0.40% Slope
8" Clay Pipe @ 0.25% Slope
8" Nonclay Pipe @ 0.25% Slope
DISCHARGE — C.F.S.

This graph shows discharge versus depth of flow.



This graph shows velocity as related to depth of flow.

In normal service a slime coating will be built up on the interior surface of the pipe. Therefore, the friction factor depends upon the relative smoothness of the slime surface and not upon the pipe material itself. Clay pipe is the only pipe material that will resist the corrosive action of the acid laden slime.

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Reader Comment

Consultants for Construction?

SIR—The article by Horace C. Crandall, "Construction Consultants Needed?" (ENR Nov. 12, p. 41) is highly pertinent—and timely. One of the most pertinent questions raised is "Are these structures being completed at the most reasonable cost and in the most expeditious manner?"

Specifications that stipulate a given performance requirement, at the same time spelling out how this performance shall be achieved, suggest a negative answer.

Mr. Crandall is correct in his analysis of the need for combined designer-constructor talents. One facet of the problem is materials of construction, in which connection I have observed several things consonant with his comments.

The practical materials engineer is neither an abstract theorizer nor a technician making and breaking test specimens. He is both of these, plus many other things. He is a specialist advisor who maintains a science and method which fills certain needs and answers certain questions facing practicing engineers and contractors.

The application of the theory and practice of materials technology requires a continuing familiarity with the subject to a degree which the busy engineer or construction official is not likely to maintain. The specialist who supplies this familiarity is the catalyst for this large and important facet of the picture so aptly drawn for us by Mr. Crandall.

JOHN C. SPRAGUE
Marietta, Ga.

▶ I say "Amen" to Mr. Horace C. Crandall's fine article. I believe my letter to you published in the April 23, 1959, issue, and excerpts from Mr. William Flesher's article in the July 2, 1959 issue, fit right in with Mr. Crandall's thinking.

G. G. SCHWESER
McDonnell Aircraft Corp.
St. Louis, Mo.

▶ With due respect to Mr. Crandall and recognizing the problem that he presents, his solution smacks unfortunately of "governmental-type" thinking—i.e. add more men and expend more money.

We contend that there are already available the highest-type of construction consultants extremely capable of performing the function that Mr. Crandall states is so directly needed. The title these people go by is: GENERAL CONTRACTOR.

We refer you to the excellent letter from Mr. H. C. Turner, Jr. (ENR Nov. 19, p. 19) wherein it is pointed out that the best interests of the owner are served through the judicious selection of an architect and a contractor to work as a construction team.

To Mr. Crandall and anyone else thinking along the lines of "Construction Consultants" we suggest that a sales effort in the direction of the "construction team" utilizing the skills and knowledge of qualified general contractors will produce an over-all much better result.

EDWIN B. LAW
President
Law-Pollitt Construction Co., Inc.
Wichita, Kan.

Sonic Boom Questions

SIR—Recent reports of extensive damage to the Terminal Building at Upland Airport, Ottawa, Ontario, attributed to a sonic boom, have some far-reaching implications (ENR Nov. 19, p. 50).

One would expect a building of this type to have been designed with adequate provision for wind pressures, in accordance with best current practice. This would be superior to most of the commercial construction that has been considered acceptable.

According to reports, the damage was widespread and unusual. If these assumptions and the facts as reported are correct, many existing structures are in jeopardy.

The questions that arise are.

- What are the ranges of intensities of forces generated by a sonic boom, and their duration?
- How does the horizontal and vertical distance from point of origin affect these forces?
- Does the shape and size of the plane have much effect?
- In what direction can these forces be expected to act?
- Will they affect our design criteria for roofs—in the South, for instance?
- Will they affect the design criteria for walls of low buildings, particularly in areas that are not exposed to high winds, or in built-up districts?

No time should be lost in obtaining such information, and making it available to the engineering profession. The potential hazards to life and property are almost beyond comprehension.

Possibly sonic booms introduce a new consideration in the design of conventional aircraft that may be exposed to the shocks. There seems to be an increase in the number of mechanical failures of late.

ARTHUR E. ROWE
Arthur E. Rowe & Associates
Cleveland, Ohio

Editors Note: ENR is preparing an article on the subject of sonic boom, what it is, what it does and how provision may be made for its effect on structures.

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614	½ Yd.	½ Yd.	½ Yd.	8 Ton*	½ Yd.
617	⅝ Yd.	⅝ Yd.	⅝ Yd.	10 Ton*	⅝ Yd.
1020	¾ Yd.	¾ Yd.	¾ Yd.	12½ Ton*	¾ Yd.
1220	¾ Yd.	¾ Yd.	¾ Yd.	16 Ton*	¾ Yd.

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1520T	20 Ton	¾ Yd.	¾ Yd.	¾ Yd.	¾ Yd.
360T	30-40 Ton	.....	.....	.....	.....

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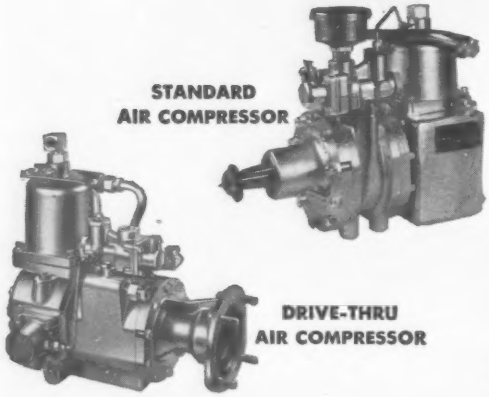

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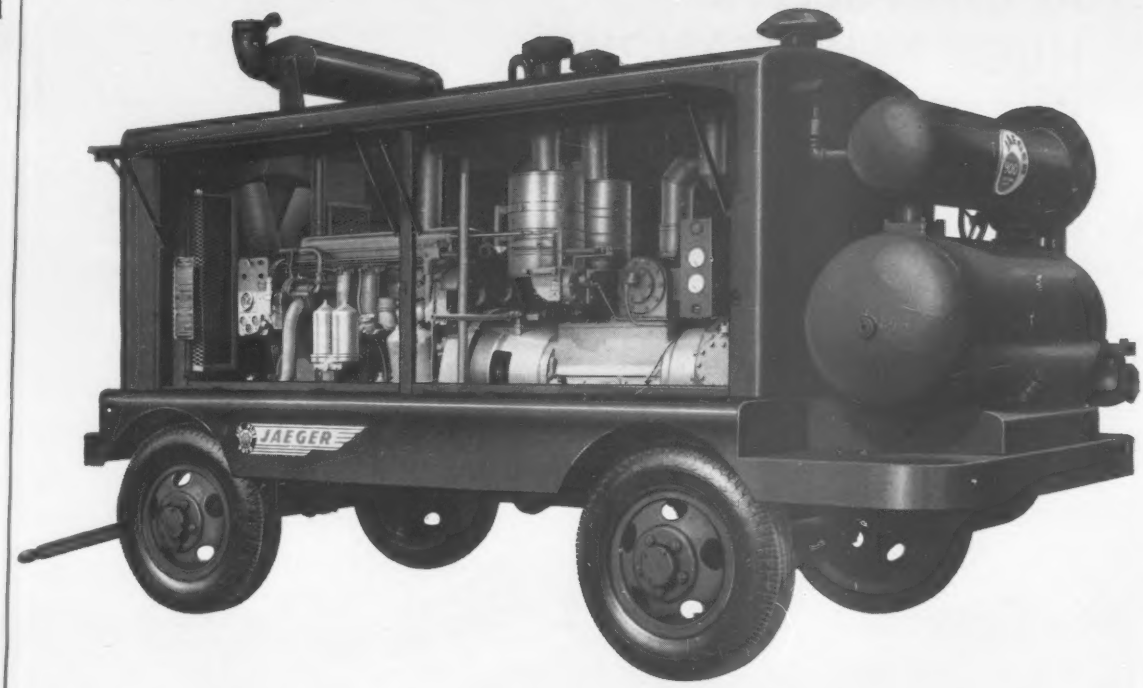

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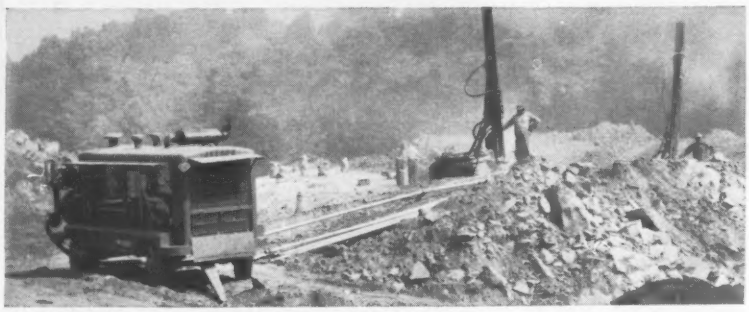
» The first "900" that delivers full capacity at a fuel-saving, engine-saving 1700 rpm . . . using the same GM 6-110 diesel which others operate at 1800. Your fuel factor is more than 500 cfm delivered air per pound of fuel consumed. *Ask your Jaeger distributor for details — or send today for complete catalog of Jaeger rotary air compressors.*



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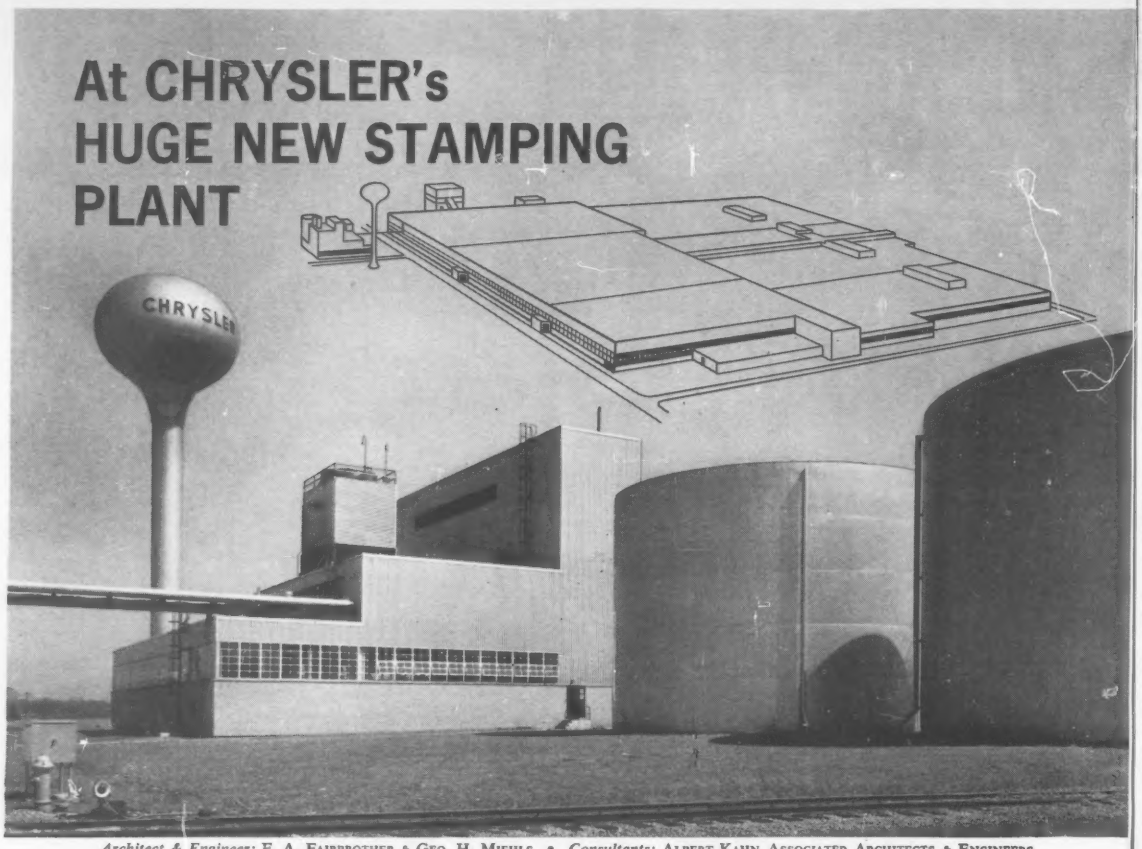

Architect & Engineer: F. A. FAIRBROTHER & GEO. H. MIEHLS • *Consultants:* ALBERT KAHN ASSOCIATED ARCHITECTS & ENGINEERS
Mechanical Contractor: THE STANLEY CARTER CO.

JENKINS VALVES assure reliable, economical control of Production's Lifelines

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Go into the power plant and you will find Jenkins Valves everywhere, controlling "production's lifelines" that supply 150,000 pounds of steam per hour . . . 30 million cubic feet of air per day . . . 7500 gallons of cooling water per minute. Jenkins Valves got the job because "every effort was made to install the finest mechanical and electrical equipment . . . and to insure minimum costs by eliminating excessive upkeep and equipment with a short life span".

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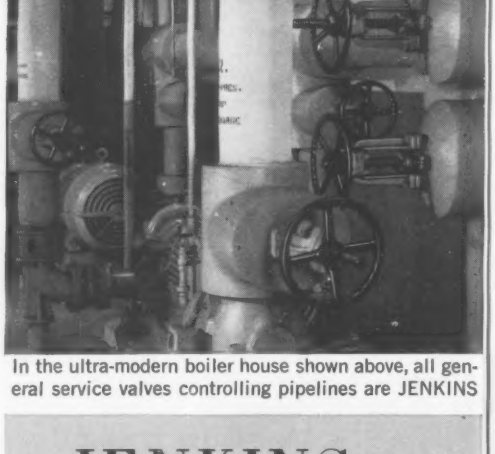
When you are buying or specifying valves, remember that the best valves are the best assurance of economical service. Jenkins Bros., 100 Park Ave., New York 17.



In the ultra-modern boiler house shown above, all general service valves controlling pipelines are JENKINS

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

ASWAN START DUE THIS WEEK—Construction of Egypt's Aswan Dam is about to begin. Soviet equipment has been moving up the Nile from Alexandria for weeks. President Gamal Abdel Nasser plans to push a button this Saturday to set off the first blast of the big job.

HATCH ACT HAS TEETH—The State of Utah may forfeit about $40,000 in federal highway funds for failure to discharge three highway department employees accused of violating the Hatch Act. The Hatch Act restricts political activities of certain categories of governmental employees. Employees in question allegedly participated in a GOP fund-raising banquet in 1958.

STRIKE THREE—About the time the Los Angeles Dodgers play their first game next summer, wreckers will start tearing down Ebbets Field, home of Brooklyn's late and lamented team. In its place will go a $22.7-million apartment building for 1,317 families—the largest single structure of its kind in New York City. The H-shaped building will have a 25-story center and 22-story wings.

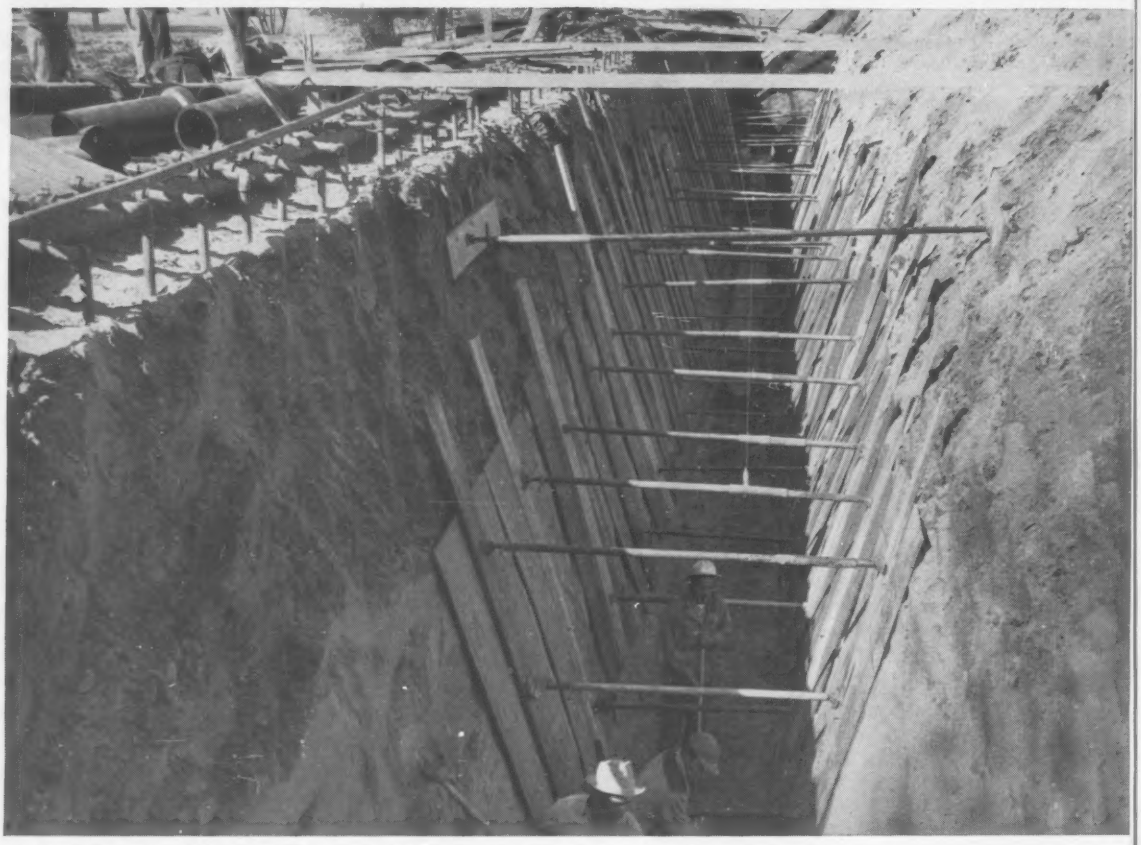
POWER POLITICS—A warning that the U.S.S.R. is catching up with the U.S. in electric power production appears likely to refuel the drive for more federal power. The warning is contained in a report prepared by a group of Senators that toured Soviet power facilities last October.

PLAN PANNED—The proposed zoning regulation for New York City is a "monstrosity, a most complicated thing," according to Samuel Rosenblum, chairman of the Codes Committee of the New York State Society of Professional Engineers. The group says the resolution (ENR Dec. 24, 1959, p. 21) is impractical—contains too many criteria to process.

TIMES CHANGE—A year ago, Engineers Joint Council adopted an austerity budget that excluded a special $2,500 expenditure for public relations. Its 1960 budget, by contrast, will have $15,000 in it for communication with members of EJC societies. Most probable medium: a quarterly publication called ENGINEER. An editor is already hired.

ANOTHER CONTRACT HAZARD—The U.S. Mail posed an unexpected hazard to Johnson, Drake & Piper on a bid for expressway construction in New York State. Mailed in time, the contractor's bid didn't show up at the letting. Later, the $350,000 bid check—minus bid and envelope—was found on the floor of a postal substation. The lost bid was not low. Postal inspectors assume the mail was rifled but the check was too big to handle.

Project: Sanitary Sewers, El Paso, Texas
Contractor: T. N. O'Kelley, Utility Contractors, El Paso, Texas
Owners & Engineers: Public Service Board, El Paso, Texas



Wellpoints on 1 side perform unusual feat in coarse sand...

Dry 18-ft Deep Trench at 3,700-ft Elevation

At the reduced atmospheric pressure of 2/3-mile above sea level, any pump works at a handicap. To compound this problem, the contractor desired to install his wellpoint system (Griffin system) at ground level. Previous wellpoint practice in the area was to place the system on a berm nearer subgrade because of pump lift limitations.

• **Question:** in coarse water-bearing sand near the Rio Grande River, with discharge lines as long as 700 ft at times, could the necessary 18 ft lift be attained by a wellpoint system installed on only one side?

• **Based on previous** local experience it did not seem feasible, but events proved otherwise. Dry conditions were successfully maintained from the start, enabling T. N. O'Kelley to beat his 100-day time limit by 40 days.

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25th YEAR

WASHINGTON OBSERVER

- Interstate clearance clearing up?
- Another mortgage prop coming?
- TVA sees growth ahead

● **A 16-ft bridge height clearance on the Interstate system is all the Department of Defense can justify right now. But it says a 17-ft clearance would be highly desirable.** That is what the Secretary of Defense has officially told the Secretary of Commerce, who will finally decide. It means the present 14-ft clearance may go up only 2 ft, instead of 3 ft.

That would cut the cost of building future bridges to about $200 million. A 17-ft bridge would cost $330 million.

Defense now wants to review all existing Interstate bridges with Commerce to determine the best way to provide by-pass routes around them. In some cases this may require raising present bridges, but Defense thinks by-pass routes can be found in most cases.

Higher clearances or by-pass routes are needed to transport intercontinental ballistic missiles.

● **An emergency $1 billion to buy FHA and VA low-cost home mortgages is proposed** in a bill that Rep. Albert Rains (D., Ala.) says will get prompt consideration by his housing subcommittee.

The legislation would re-enact the anti-recession device of 1958, give $1 billion to Federal National Mortgage Association to purchase government-backed mortgages up to $13,500, or $14,500 in high cost areas.

Homebuilders have taken no stand for or against the proposal. They will wait until the NAHB convention in Chicago next week to state their position. The decline in home starts has not yet gone far enough to cause much clamor for emergency relief.

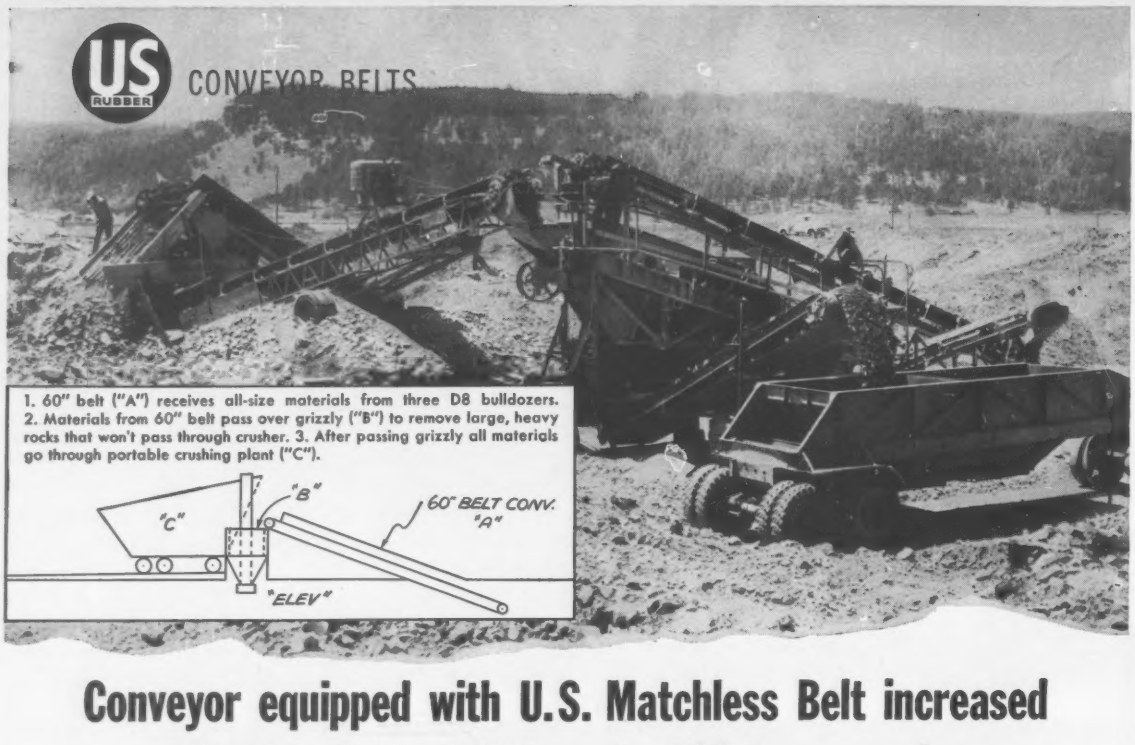
● **The Tennessee Valley Authority emphasizes future growth in its annual report.** It talks of planned new navigation and power projects: Melton Hill Dam (72,000 kw) on the Clinch River; an expansion of the Fort Loudon Dam on the Tennessee and Little Tennessee rivers; Nemo Dam on the Obed River; a new navigation lock at Wheeler Dam on the Tennessee.

TVA points out it will need to build about 1 million kw of new generating capacity—hydro or steam—every year to keep up with demand. This will require a $175-million construction budget in fiscal 1961 and about $225 million annually for a few years afterward. About one-third of this money will come from TVA's own power revenues, the rest from new revenue bond financing.

● **A ruling by California's attorney general appears certain to have strong implications for Buy American policies.**

The ruling was made following complaints by General Electric and Westinghouse Electric that Los Angeles had violated California law when it awarded a $9.2-million contract to Brown-Boveri of Switzerland for two 230,000-kw steam generators. California law requires municipalities to buy products only from suppliers who agree to use or supply "substantially all materials which are manufactured in the U. S."

State Attorney General pointed out that the California law conflicts with a federal "favored nation" treaty with Switzerland, and that where such a conflict occurs, the federal treaty prevails.


US RUBBER
CONVEYOR BELTS
1. 60" belt ("A") receives all-size materials from three D8 bulldozers. 2. Materials from 60" belt pass over grizzly ("B") to remove large, heavy rocks that won't pass through crusher. 3. After passing grizzly all materials go through portable crushing plant ("C").
"C"
"B"
60" BELT CONV. "A"
"ELEV"

Conveyor equipped with U.S. Matchless Belt increased production from 175 tons to 300 tons per hour

Such records as this have made U.S. Rubber the world's largest producer of conveyor belts.

In this instance the "U.S." Belt helped increase production at the Carlson-Lien Company (Piedmont, S.D.), a supply firm currently producing road-building crushed rock and delivering it to highway projects. The belt is 60" wide, 35 feet from center to center (78 feet overall). "Our intention," says Bruce Lien, company secretary-treasurer, "is to replace all belts with U. S. Rubber Belts."

In this operation, bulldozers push the rocks to be processed into the loading point. The conveyor belt then carries this material to the grizzly. The belt was designed to withstand direct loading by bulldozers. The impact of the large rocks falling directly on the belt does not damage the conveyor system. This permits the grizzly to be placed at the discharge end of the conveyor instead of at the feed point as in conventional installations.

The superiority of this belt not only helped speed up and increase production, but also eliminated the need for three or four men to laboriously remove large rocks that would damage a belt of inferior quality. The "U. S." Belt proved so efficient in tons moved per hour that another bulldozer was added to keep the loading pit stocked with raw materials. "The belt will pay for itself on this one job. We recommend it to anyone," says Bruce Lien.

• • •

When you think of rubber, think of your "U.S." Distributor. He's your best on-the-spot source of technical aid, quick delivery and quality industrial rubber products.

Close-up of 60" U. S. Matchless® Belt carrying rocks from raw material pit up incline to crusher.

This installation was handled by "U.S." Distributor W. S. Nott, Minneapolis

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Outlook: Another Big Year Ahead

- **Construction volume in 1960 should come close to the record of $21.7 billion set in 1956, with most types of work up.**

- **That will be a healthy increase over 1959's $20.3 billion and a continuation of the upward trend halted by the '57-'58 recession.**

The construction industry wrote up its second largest dollar volume of new business in 1959—$20.3 billion in heavy construction contracts, according to ENR figures.

Construction men sold this 6% increase in work without extra federal aid for highways or special assistance for housing—two crutches that the federal government used to pull the U. S. economy out of the 1958 recession. Construction lifted its volume by a giant $1.1 billion, re-establishing the growth trend that ended with the recession of 1957-58.

The industry is now set to jack up its 1960 sales by an even greater amount—$1.3 billion—to a near-record $21.6 billion.

ENR forecasts that private construction awards will rise by 6%, public works by 7%. These increases will push this year's total very close to 1956's record $21.7 billion.

A bigger year than '59 is ahead for most types of work. Sharpest increases should come in industrial building and bridges, both up 34%, waterworks up 21%, commercial building up 16%, highways up 15% and sewerage up 11%.

New highs will be set by commercial building, waterworks, sewerage and bridges (by a narrow margin over the 1953 high). Also setting a new high this year will be missile facilities construction, a newcomer to the ranks of major types of construction in '59, when it tripled its 1958 volume.

These increases will more than offset declines of 17% likely in private mass housing, 19% in public housing and 7% in public nonresidential building.

Plans for future construction turned sharply upward in 1959. Some 20% more construction entered the planning stage than during 1958. This pushed the ENR Backlog of Proposed Heavy Construction up to a record of more than $117 billion as of December 31.

To clear the way for a bigger rise in contracts this year than last, the construction industry had to crash three rugged roadblocks late in '59. The way the industry absorbed these shocks and came out stronger than ever made '59 one of the most crucial years in construction history.

The most serious—and most literal—of the 1959 roadblocks was the cutback in highway and bridge contracting. The Bureau of Public Roads told the state highway departments in August that the Highway Trust Fund was dangerously low; the states couldn't count on reimbursement for the federal share of future Interstate and ABC awards.

Within weeks three out of every four state highway departments canceled bid calls or postponed contract awards. Contracts dropped off sharply, hitting a low in October.

When BPR came out early in October with its blueprint of quarterly controls on federal aid for fiscal 1960 and its apportionment of aid for fiscal 1961, highway and bridge contractors took the news grimly. State highway departments were chafed. The control schedule allowed the states to obligate only a small portion of their fiscal 1960 federal aid in the October-December period. Some states just gave up calling for bids for the remainder of the year because they felt the small amount of federal funds didn't justify a letting.

Result: Highway and bridge contracts in the second half of 1959 fell 15% below the first half of the year and 38% under the record six months of July-December 1958 (which included extra federal aid to fight the recession).

Highway awards for 1959 wound up 22% under 1958's all-time high, though it did manage to top other previous years. Bridge contracts fell 17% under '58 to the lowest since 1955. (Note that ENR's 1959 total for bridges doesn't include the July $126-million contract for the Chesapeake Bay Bridge-Tunnel, which is in abeyance until the bonds to finance the project are sold.)

The second roadblock of '59 was the prolonged steel strike. Contractors generally took no chances on being caught short by lack of steel due to a strike. They ordered early as much of their third quarter steel needs as was feasible for delivery by June 30, the day the steelworkers' contract expired.

The advance preparations paid off. The tempo of construction schedules held high until October. Then shortages of structurals and bars began to slow an increasing number of projects.

But the most serious effect on the construction industry was what the steel strike did to the industrial market.

Proposed industrial plants had piled into the planning stage at a very fast pace during the first five months of '59. But when the strike appeared imminent in June, industry began to hold back on appointing engineers and architects to design new plants. The slowdown continued during the strike. And while the resumption of steel operations triggered a substantial increase in proposed plants, the reduced rate of plans during June-October '59 could mean a slow start on what should be a very big industrial building market this year.

The steel strike didn't catch up to industrial plant construction contracts until October. Then its effect was noticeable as awards plunged. The resumption of steel output in November brought a flurry of contracts, followed by a reduced pace through the end of the year—probably reflecting the cutback in plans early in the summer.

However, industrial awards for the year soared 70% above 1958's four-year low. The $2.98-billion total came close to '57, but was far below the '56 peak. In 1960, industrial contracts should step up by a healthy amount and score the third highest dollar volume of the postwar period.

Commercial building plans showed a similar, though less pronounced, reaction to the steel strike. But commercial building contracts dropped off earlier in the strike—declining steadily between August and October. However, awards perked up in November and by year's end commercial had racked up, as expected, a new all-time high. Contracts came close to $2.2 billion, 21% above 1958's low total and 6% greater than 1956's record.

(*Turn the page*)

Heavy Construction Contracts Forecast † (in millions)

	1958 Actual	1959 Actual	% Chg. 58–59	1960 Forecast	% Chg. 59–60
All Heavy Construction	$19,165	$20,279	+ 6	$21,580	+ 6
By Ownership					
PRIVATE	7,730	10,388	+34	11,035	+ 6
PUBLIC	11,435	9,891	−13	10,545	+ 7
State & Municipal	8,609	7,142	−17	7,670	+ 7
Federal	2,826	2,749	− 3	2,875	+ 5
By Type of Work					
PUBLIC					
Waterworks	306	373	+22	450	+21
Sewerage	618	653	+ 6	725	+11
Bridges*	713	569#	−20	760	+34
Highways	3,729	2,887	−23	3,320	+15
Earthwork, Dams & Waterways	1,045	911	−13	950	+ 4
Buildings:					
Excl. Housing	2,610	2,575	− 1	2,400	− 7
Housing	1,055	571	−46	465	−19
Unclassified	1,369	1,364	− 0.4	1,485	+ 9
PRIVATE					
Buildings:					
Mass Housing	3,739	4,694	+26	3,900	−17
Commercial	1,795	2,152	+20	2,500	+16
Industrial	1,756	2,981	+70	4,000	+34
Unclassified	429	549	+28	625	+14

† In Continental U. S.; excludes Alaska and Hawaii.
* Includes private bridges.
# Does not include $126-million Chesapeake Bay Bridge-Tunnel contract, which has been removed from these statistics until the bonds are sold.

The third roadblock was money—too little capital to meet the demand. And this created an important shift in the 1959 construction market. This shift will be more pronounced in 1960 because demand is going to step up faster.

The supply of new capital for construction and other borrowers is the balance wheel for the over-all construction market. But as this balance wheel is moved in the direction of industry's demand for more money to invest in new plants, equipment, inventories or working capital, the mass housing market finds itself going in the opposite direction—toward tight mortgage money.

Industry is more able to pay the higher borrowing costs that investors may require. But interest ceilings on government-insured mortgages limit homebuyers' ability to compete for the investor's dollar when interest rates are rising.

However, high profits in the first half of '59 and record depreciation reserves generated by industry have paid about 80% of construction bills arising from the 1959 industrial building upturn. So industry's demand on the capital markets has risen slower in relation to construction contracts than it did in the '55-'56 expansion, for example. Moreover, the financing needs of industry usually trail industrial contract peaks.

This situation allowed mass housing contracts to run up a thumping 26% jump in '59, while industrial building spurted 70%.

While industry's security sales for construction money rose rather sharply in the fall of '59, total demand for the year was down 17% from '58, according to ENR figures. State and local construction bonds, meanwhile, dipped 6% below last year.

These cuts left enough slack to allow mortgage loans to rise and to permit increases in federal government and consumer debt.

Tight money is the only one of these roadblocks facing construction planners in 1960. Industry will up its demand for capital to pay increased construction bills and rebuild inventories. So mass housing will drop about 17% below the figure for 1959.

Rising money costs are also likely to hold down the 1960 gain in commercial building and limit the volume of some types of local public works, to the extent that local agencies are unwilling to pay higher borrowing costs or are prohibited from doing so by law.

The pillar of strength in 1959's healthy construction market was private work. Contracts shot up 34% above 1958's four-year low. This jump in private work offset a sharp 17% drop in state and local awards and a 3% dip in federal public works.

Star performer in private work was industrial building, up 70%. This rise enabled private work to move ahead of public in total volume for the first time since 1956. All other major types of private work contributed to the gain—mass housing up 26%, commercial up 21% and private "unclassified" up 17%—mainly due to a hefty expansion in gas pipeline construction contracts.

Waterworks up 23%, sewerage increasing 6%, and missile base construction were the only major types of public works to give contractors more business last year than in 1958. All three set new highs. And they should rise even further in 1960.

Missile base construction became a major construction market in 1959, as awards soared to more than $350 million. This was about three times the 1958 volume reported by ENR. And the outlook is bright—awards this year should rise an additional 15%.

Contracts for municipal and county airports also set a record in '59 of $157.5 million, up 23.3% over the '58 high.

Sharp declines in highway and bridge awards reflected the agonizing readjustment in the federal-aid highway financing program.

The moderate 13% decline in earthwork-dams-waterways reflected a cut in new starts for federal projects and the fact that 1958's total included hundreds of millions for the New York State Power Authority's Niagara project. However, 1959 did have at least one whopping dam contract—the $93-million contract for Wanapum Dam by Grant County Public Utility District, Washington.

And 1960 should have a more liberal sprinkling of new dam projects if the Administration proves out expectations that it will relax on its stand against new starts.

Public building awards dipped in 1959. Declining school contracts contributed to a 12% drop in state and municipal nonresidential building. But federal projects increased, getting a substantial assist from increased awards for TVA steam electric plant construction.

Public housing awards dropped more than any other key type of construction. The year saw a cutback of nearly 50% in Capehart military housing—awards in the second half of '59 totaled a little over $50 million, compared to more than $250 million in the first half of '59 and $240 million in the second half of 1958.

Down about 40% were local housing projects financed under slum clearance programs, while other state and local public housing contracts fell by one-third from their 1958 total.

Long Strike Is Settled At Glen Canyon Dam

Work on Glen Canyon Dam, shut down by a strike since July 15, resumed this week after prime contractor Merritt-Chapman & Scott and the five striking crafts agreed on premium pay of 50 cents an hour.

First of the workers returned on Monday. M-C&S plans to rehire as fast as operations permit. No estimates are available as to the strike's effect on construction schedules, but work was ahead of schedule when strike began.

Settlement was reached after the Associated General Contractors of Arizona assured the Phoenix Building and Construction Trades Council that the premium pay formula for workers at the dam would not expose the unions to liability under their state-wide contracts with AGC members.

The strike originally began over union demands for subsistence pay of $6 a day. This demand was later dropped and subsequent negotiations concentrated on the issue of premium pay (ENR Oct. 29, 1959, p. 90).

One Killed, Four Injured In Apartment Failure

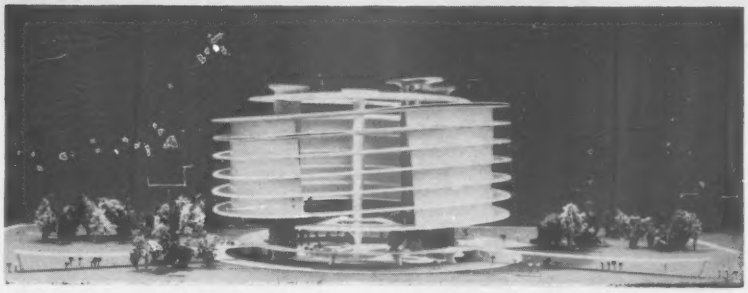
One worker was killed and four others injured when part of a reinforced concrete floor in a seven-story, wall-bearing apartment building under construction collapsed in Arlington, Va. A 24x30-ft section of the first floor slab gave way as crews were placing concrete.

The slab was reinforced with paper-backed wire mesh, which also served as permanent forms for the slab. The mesh was supported on open web steel joists.

Arlington County building inspectors found there was no violation of local building codes involved in the accident. However, their report recommended that, in the future, builders tie together the three joists at each end of a run of mesh. Horizontal rod cross-bracing, welded to the top chord, would form horizontal trusses to restrain the end joists against overturning under the pull of the paper-backed mesh when concrete is placed. This requirement appears in the manufacturer's directions on each roll of the mesh, but allegedly wasn't followed by the builder.

There were no wall ties at bridging lines anchoring the end bay joists spanning parallel to the wall.

Sheridan & Behm, Arlington, Va., are the architects for the $2.5-million project. George Fortune, Alexandria, Va., is the structural engineer. Owner-builder is Reinsch Construction Corp., Arlington, Va.; William Seltzer, Washington, D. C., is the concrete subcontractor.



Supermarket of the Future?

A proposed spiral-ramped supermarket, featuring automatic self-service, bears a startling resemblance to Frank Lloyd Wright's Guggenheim Museum. A model was displayed last week at the Food Exposition and Country Fair held in the New York Coliseum.

A passenger elevator would carry shoppers to the top floor, where they will travel down a spiral ramp on a moving sidewalk past food displays. At any point of the trip buyers would step off the sidewalk and mark items for purchase. Shoppers' selections would travel on electronically controlled conveyors to the check-out point, where a computer produces an itemized bill.

Cost estimate by the designer, Prof. W. N. Breger, is $12 per sq ft for the reinforced-concrete building. This compares with about $10 per sq ft for conventional supermarket buildings. Prof. Breger estimated $350,000 for the moving sidewalk and $30,000 for each check-out counter. All estimates assume economies attainable in a large-scale building program.

Prof. Breger, who is chairman of the architectural design department of Pratt Institute, was assisted by Michael Brill. Martinson & Gage of New York City are engineering consultants.

Daitch-Shopwell supermarket chain sponsored Prof. Breger's study.

Slide Derails, Dunks RR Cars

An earthslide north of Seattle played havoc last week with a crack passenger train belonging to the Great Northern Railway Co.

The slide, involving an estimated 10,000 cu yd of dirt, occurred in two separate earth movements some 20 minutes apart. The first movement derailed a four-section diesel locomotive and mail car. The second pushed them into Puget Sound and derailed six passenger cars. In the time between the slides, train passengers were able to get clear. Only 10 persons were injured, none seriously.

The accident occurred between Seattle and Everett on a 30-mile section of track known to be in a slide area.

It was attributed to hydrostatic pressure built up in and behind a previously undetected clay pocket. Despite extensive damage, including 650 ft of ripped-up track, repair crews had the line back in operation within 24 hours.

New truss was pulled onto the old span . . .

and lifted by two sets of tackle at each end . . .

Between Trains: Building a New Bri

The Union Pacific Railroad is building a 247-ft span around an existing bridge while trains continue to use it. The bridge is over the Snake River at American Falls, Idaho.

By use of the span-around-a-span technique, the railroad will have interrupted traffic on the bridge for just a few hours during the six-month construction period.

The span being replaced is a deck structure built in 1902. Not only has it lived out its useful life, but it's an open deck (ties laid on stringers) and that makes it vulnerable to fire. Trusses for the new span weigh one ton per foot. They will support a ballasted deck impervious to fire; and their load capacity is sufficient to carry any foreseeable motive power.

Both the maintenance of traffic on the existing span and the physical setting of the bridge posed problems that found a common solution in the construction procedure being used.

The bridge is part of the Union Pacific's single-track main line to the Pacific Northwest. Detouring trains over "foreign" lines while the bridge was built would have been prohibitively expensive.

To build a "shoo-fly", by-pass the old span—it would also have been expensive, because of the crossing's height. From rails to the surface of the Snake River directly below is 110 ft. This height also ruled out conventional construction utilizing falsework.

For these reasons, engineers adopted the span-around-the-span technique. This approach permitted traffic to continue virtually uninterrupted and allowed the use of the existing span as a base from which to erect the new span.

In concept, the method is simple. The two trusses of the new span were set on the existing concrete piers, outside the trusses of the old span. Cross members for the new span are being worked through and around members of the old span. When the work is finished, load will be transferred from the old structure to the new. Then workers will disassemble the old structure, piece by piece.

Simple as the method is in essence, its execution is not. It requires a high degree of ingenuity and skill.

The riveted truss members, fabricated in Omaha by Paxton and Vierling Steel Co., were shipped to American Falls for erection.

Workmen assembled the trusses on a 510-ft length of track especially laid for the job and consisting of four parallel rails. The two inner rails are standard gage 131-lb steel, connecting with the railroad's main line near the bridge. Spacing of the two outer rails is 16 ft, corresponding to the spacing of the deck trusses of the old span; these rails continue from the bank across the top chords of the old bridge.

The outer rails serve as tracks for steel outriggers attached to each side of each truss, to prevent tipping as the trusses were moved out on the old span.

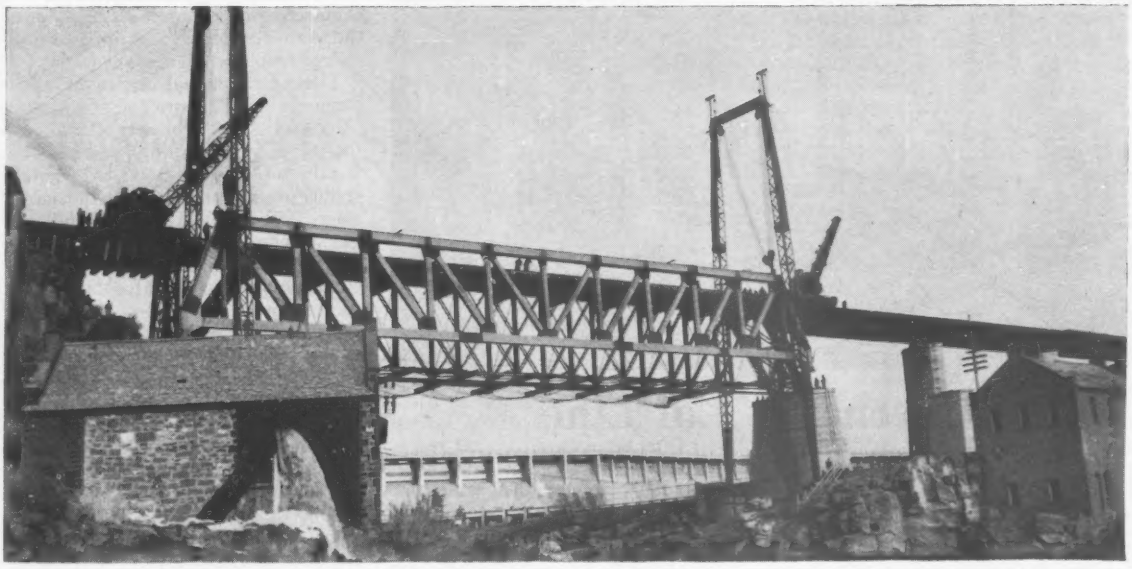
Erection of each 250-ton truss was in vertical position, on two trucks. The specially built trucks resemble a standard boxcar truck in appearance but are much heavier.

Mounted transversely on each truck is a structural steel outrigger. At each end of the outrigger, workers connected an assembly of vertical members. At the bottom of each of these assemblies is a shoe, which maintained contact with the outer rail to prevent tipping of the truss. Workers also installed a heavy diagonal brace from each end of each outrigger to the top of the 40-ft-high truss. And the top chord of the truss was guyed and braced to maintain longitudinal rigidity as the truss was moved into position.

When the truss was completed, constructors pulled it slowly into position on the old span, using a winch mounted on a locomotive crane.

. . . then swung over the side. Cranes were used to drift truss into position for lowering.

New Bridge 'Around' an Old One



Constructors placed new truss with minimum delay. Process was repeated for second truss.

Workmen erected a frame near each end of the old span to lift the truss from the trucks and set it on the concrete piers. Each frame was made up of two structural steel legs, each 150 ft long and set on a concrete foundation, and a head frame. The two frames were cross guyed to one another and to concrete anchorages beyond the ends of the bridge. Pacific Crane and Rigging Co., a subsidiary of Macco Corp., of Paramount, Calif., furnished the frames and lifting tackle under a lease agreement; their personnel aided in developing and coordinating the procedure.

Preparation of equipment for handling the trusses required three weeks of work directed by Louis Stec of Pacific Crane and Rigging.

Each head frame carried a double

set of lifting tackle. Each load block was reeved with 17 parts of ⅞-in. wire rope. Workmen used both sets of load blocks to lift the truss vertically off the trucks until it had room to swing. Then the trucks and outriggers were disconnected and wheeled out of the way. Following this, load blocks on one side of the truss were slacked off and the total load was taken by the blocks on the other side.

The effect was to swing the new truss outboard, beyond the old truss, in position for lowering. Actually, the load blocks could not swing the truss out quite far enough for adequate clearance. Engineers solved this problem by using the booms of two locomotive cranes (one at each end of the span) to drift the truss out slightly farther. The new truss was then lowered into position on the old piers and secured to the old truss, ready for installation of cross members. Lifting tackle was disconnected and swung back out of the way.

Transfer of each truss was tightly scheduled. The first was put in place in slightly over five hours. Workers placed the second truss in three hours and 45 minutes.

Placing the trusses completed the ticklish portion of the work. The remainder of the operation is comparatively routine, thanks to the planning that went into the design of the new trusses.

Both the old and new trusses have 12 panels of identical lengths. However, the panel points of each new truss are staggered with those of the old, falling midway between the panel points of the old trusses. Both top and bottom chords of the new trusses are slightly higher than those of the old. This foresight will permit workmen to place bracing and floor beams around the members of the old structure. The load will be transferred from the old structure to the new, panel by panel.

Removal of the old bridge will be made easier by beams that are playing a double role. Hung at panel points of the old trusses, they carry safety nets. When the new bridge is completed, workers will transfer hangars for the beams to the new trusses. The beams then will serve both for the net and as supports to permit dismantling of the old structure without falsework.

Cost of the project is about $500,000. The 247-ft truss span is part of a 962-ft crossing, including deck girder approach spans. Now of open deck construction, they will be converted to ballast-type deck in the near future.

The operation was directed by James Curran, bridge engineer of the Union Pacific Railroad. Frank Cogan is project engineer for Pacific Crane and Rigging.

Tower Overhangs Lot Line

Cantilevered framing will provide an additional 10,000 sq ft of floor space in upper stories of San Francisco's newest downtown office building, now under construction. Completion date for the $10-million project is August, 1961.

The owners acquired air rights on two sides of the building. This enabled them to extend above-ground stories beyond the property line.

Girders cantilever out 15 ft on all four sides. They are 27-in. WF sections, welded to column flanges.

Typical floors have a 15-ft square reveal at each corner. This provides eight corner offices on each floor. Air-conditioning ducts, 6 ft square, will appear as gold-plated shafts inside these reveals.

Exterior walls above ground floor will be faced in white quartz; ground-floor walls will be granite-faced.

Architect is Anshen and Allen; structural engineers are two cooperating firms: Robert D. Dewell, and Gould and Dekenkolb; general contractor is Dinwiddie Construction Co. All are from San Francisco.

Engineer Recruiting Up; School Enrollments Down

Once again the figures on engineering manpower and engineering school enrollments are demonstrating how supply and demand can get out of phase.

Engineers Joint Council announces the demand for engineers increased materially in 1959.

The U. S. Office of Education reports that undergraduate enrollment in 234 engineering colleges fell off 5% during the year—despite a 4% gain in over-all college enrollments.

The ninth annual report of EJC's Engineering Manpower Commission—"Demand for Engineers—1959"—says the stepped up recruiting last year was mostly satisfied by a 38,162-engineer graduating class. This was the largest since 1951. Holders of bachelor's degrees started at $510 per month.

EJC forecasts half again as many engineers will be recruited by 1966 as were recruited in '59.

In the face of EJC's claim that demand for engineers increased sharply from 1958 to 1959, the college enrollment figures appear a paradox.

It was the second consecutive year that freshman enrollments in engineering dropped. Enrollments fell 11% in 1958 and 3% in 1959. However, civil engineering enrollments are steady.

As opposed to the drop in engineering undergraduates, 1959 saw a 7.5% increase in enrollment in engineering graduate schools. There was a 165% jump in '58. However, the fact that graduate enrollments are at an all-time high "is not as reassuring as it should be," says Education Commissioner Lawrence G. Derthick, "because this only reflects increased undergraduate enrollments for several years prior to 1958."

Seattle's '57 failure brings . . .

Sewer Inspection by Camera

Seattle is getting at least two things out of its big sewer break of 1957—a $2-million repair bill and a new sewer inspection program.

Chief aim of the inspection program is to lessen the danger of breaks like the one that caused a 120x200-ft cave-in 60 ft deep in November, 1957 (ENR Nov. 21, p. 15, Dec. 12, p. 24 and Dec. 19, 1957, p. 26).

It is unlikely that any type of inspection could have prevented that break, but current inspection methods have revealed defects in other sewers.

The program involves an expenditure of $30,000 a year. Carried out by a four-man crew with equipment valued at $10,000, it calls for physical or photographic inspection of several hundred miles of sewers at intervals of three to five years.

Physical inspections are limited to periods of low flow during the dry season and to sewers at least 48 in. in diameter. Photographic inspection is scheduled for 24- to 48-in. sewers.

The first 10 miles of "walk through" inspections resulted in the following recommendations:

- That laterals 10-in. and larger be connected at a downward angle and slanted with the flow of the trunk sewer to facilitate passage for inspection and maintenance purposes.
- That side sewers be connected to trunk sewers at a downward angle to prevent formation of mineral deposits, which tend to build up gradually and block off side sewers.
- That the first and second lengths of pipe out of the trunk sewer, on side sewer and lateral connections, be either shorter than the rest of the line or stronger to avoid pipe failures from settlement of backfill.
- That side sewer and lateral connections to manholes be made only at the base, to make manhole entrance possible for maintenance and inspection crews.

Where physical inspection is difficult, a water-tight camera will be towed between manholes on a small raft, automatically taking photographs of the tunnel at intervals. Photographic inspections will provide a permanent record for future comparisons.

In physical inspections, two 25-hp. exhaust fans are set up over manholes upstream and downstream from the manhole to be entered, insuring a supply of good air. Crews are equipped with gas-testing equipment and other safety devices.

Prior to the present program, sewer inspections were made by sewer cleaning and maintenance crews. Sewers were "candled" by shining a light from manhole to manhole, but this method was ineffective in the "Big Hole" area of the north trunk, where manholes are 2,100 ft. apart.

Schools Lag; U. S. Aid Unlikely

"The nation is not moving fast enough to reduce the classroom shortage," says Arthur S. Flemming, Secretary of Health, Education and Welfare. Nevertheless, the Administration is holding out against any federal aid to school construction that will unbalance the budget.

Classroom construction in 1959-60 will hit about 62,700, 10.4% behind 1958-59, when 70,000 new classrooms were constructed. And '58-'59 was the first year since the end of World War II that school construction declined—2.9% from the previous year.

The number of classrooms needed to maintain an "adequate teacher-to-pupil ratio" has increased by 600, to 66,400. An "adequate" ratio, however is each state's estimate of the desired ratio—it ranges from 22 to 40 pupils to one teacher—there's no national standard.

"We have barely been building enough schools each year to take care of annual enrollment increases and to replace classrooms that have been abandoned," says Secretary Flemming. The wide gap between classrooms needed and classrooms available is not being narrowed.

Mr. Flemming's aides have been working on a "compromise" school construction bill with Democrats on the House Education Committee. They have agreed to limited grants for the first two years to school districts bumping up against legal debt limits.

But there is no yielding on the basic Administration stand: Federal contributions only to the extent of paying half the interest on schools bonds, spread out over 25 or 30 years.

The Democrats' program, as contained in the Murray-Metcalf bill, is for outright grants of more than $1 billion a year for several years. Democrats dismiss the Administration's compromise as "peanuts."

Any large-scale grant program would probably be vetoed by the President. Outlook is for another stalemate on school construction.

Elwyn Seelye Dies; Noted Structural Engineer, Author

Elwyn E. Seelye, structural engineer and an authority on concrete design and construction, died last week at the age of 75.

He was senior partner of Seelye, Stevenson, Value & Knecht, consulting engineers, New York City.

A 1904 civil engineering graduate of Cornell University, Mr. Seelye formed his own consulting engineering firm in 1912. Later he joined in partnership with other noted engineers. His firms were consultants on such a well known structures as the Thomas Jefferson Memorial, Washington, D. C.; addition to the British Museum, London; annex to the Congressional Library; and the 600-ft-dia radiotelescope now under construction at Sugar Grove, W. Va. They also designed many large military installations for the U.S. armed forces before, during and after World War II. These included Camp Shanks, Orangeburg, N. Y.; the air base at Fort Dix, N. J.; and Camp Kilmer, Stelton, N. J.

Mr. Seelye was the author of the three-volume "Data Book for Civil Engineers" and of numerous articles on structural engineering published in ENR.

He was one of the pioneers in the design of flat-plate concrete buildings and of composite (steel-concrete) construction for buildings. At the time of his death, his firm had just completed the design of the largest building to date of composite construction—a federal court building in Brooklyn, N. Y.

Mr. Seelye also was an authority on repair of deteriorated structures, and offered his knowledge freely to the engineering profession to secure more durable construction.

With great courage, he tackled difficult and complex assignments. And he did not fear writing on controversial engineering topics or discussing them in public. His concern always was to extend engineering horizons.

Around the Country . . .

• **Levitt offers stock**—Homebuilder William J. Levitt will offer to the public, 20% of the 2.9 million shares of Levitt & Sons, Inc., stock. Sale is for the account of Mr. Levitt; no funds will go to the company, according to a registration statement.

• **Experimental reactor plant** – The AEC has selected The Fluor Corp. of Los Angeles as architect-engineer for an experimental reactor plant for testing the use of organic fluids as reactor coolants. The $6-million plant will be located near Idaho Falls, Idaho.

• **Mobile River tunnel**—Tentative agreement has been reached among U. S., state, and city highway agencies for construction of a second vehicular tunnel under the Mobile River at Mobile, Ala. The new tunnel and the existing Bankhead Tunnel will constitute a link in the Interstate System.

• **Far West development**—A group of California builders has revealed plans for a $13 million complex of residential and commercial development on the south shore of Lake Tahoe, just over the Nevada line. The complex will include a 160-unit hotel, a 45-acre housing development, an office building, medical-dental building, specialty stores, and apartments.

• **Docks for trucks**—Edwards and Kelsey, New York City consultants, are making an economic and engineering feasibility study of two pilot sites for public off-street truck-loading docks in New York's truck-choked garment district.

• **More power to them**—Commonwealth Edison Co. of Chicago plans the biggest four-year expansion in its history starting this year. By the end of 1963, the electric firm expects to spend $370 million for generating plants, $320 million for transmission and distribution facilities and $10 million on general plants.

• **Northland grows**—H. L. Vokes Co. of Cleveland will design and build twin 12-story office buildings, estimated to cost $8 million, as part of Detroit's Northland Shopping Center.

• **College building program**—Loyola University, Chicago, will spend $29.3 million over the next decade in construction of six new buildings. The program includes a $10-million teaching hospital and $8-million science building.

• **West Coast cement plant**—The Flintkote Company has announced plans to build a $14-million cement plant at Redding, California.

Arizona Revises Colorado Plan

Arizona Power Authority has expanded by $58 million its plans for the Bridge Canyon-Marble Canyon hydropower project on the lower Colorado River (Arizona).

In a revised license application filed with the Federal Power Commission, the authority estimates the project cost at $347.3 million. In the original application, cost was set at $289.5 million.

Other principal changes include: Height increase of Bridge Canyon Dam from 450 ft to 480 ft; initial generating capacity increase from 780,000 kw to 820,000 kw; ultimate generating capacity increase from 1,390,000 kw to 1,470,000 kw. The revised application calls also for two additional silt-detention dams: Tolchico on the Little Colorado River and Moenkopi on the Moenkopi River, Wash.

The revised application had been anticipated for many months. Almost immediately after Arizona filed its original application (July, 1958), the Bureau of Reclamation announced changes in its water level recommendations for that stretch of the river and Arizona began consideration of a revised application to fit the new Reclamation data.

Now, the FPC is awaiting a similar, competing license application from the City of Los Angeles for the same stretch of river. Los Angeles has told the FPC informally that it will submit one shortly, and since such projects are usually consolidated in hearings anyway, the FPC probably will wait and schedule both applications for the same hearing.

Both Arizona and Los Angeles filed competing applications with the FPC for preliminary study permits back in 1957, and this battle has now moved forward into maneuvering for a license application. The Bureau of Reclamation, which once considered building Bridge Canyon as a $1-billion multipurpose project, has dropped entirely out of the picture.

Who Pays for What?

Senate-Cabinet exchange opens road finances fight

The annual battle over what's to be spent for federal highway construction and where it's to come from promises to be sharper than ever this year.

Sen. Harry F. Byrd (D., Va.), Chairman of the Senate Finance Committee, fired the first shot, a letter to Commerce Secretary Frederick F. Mueller.

Senator Byrd's letter asked for assurance that the Administration will stick to pay-as-you-go financing, suggested a reappraisal of the 90-10 payment formula and criticized highway design.

Senator Byrd regards as temporary the one-cent-a-gallon gasoline tax increase and the general revenue diversions to the highway fund that Congress authorized last year.

Secretary Mueller said his staff is investigating these points. He reminded Senator Byrd it was a Democratic Congress that legislated the current highway financing program.

Mr. Mueller avoided any specific references to another gas tax rise and the diversion of other-than-highway-user taxes to the highway program.

There are insistent rumors in Washington that the White House will ask Congress to raise the gasoline tax by another half cent to help pay for federal construction commitments (ENR Dec. 24, 1959, p. 17). This is expected to get little support from an election-year Congress.

Senator Byrd claims that the present law—under which the federal government pays 90% and the state 10% for Interstate highway building—is diverting state money from the ABC roads, which are financed on a 50-50 basis.

BPR Reduces Red Tape For Contract Lettings

A new ruling by the Bureau of Public Roads is expected to speed up advertisement of bids and award of contracts for federal-aid highway and bridge projects.

State highway departments no longer must get clearance from BPR before letting each contract if they stay within the bureau's quarterly obligation schedules. And states no longer have to maintain a special contract award schedule in keeping tab on federal aid they are to receive.

BPR placed the states on a dollar obligation schedule last October, when it started its contract control system. Each state had to maintain a separate schedule on contract awards in order to spread contracting further. This was to ease the dollar strain during the transition into the new system.

Bridges of new Ohio Freeway are double-protected against corrosion with...

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Beam bridge carries Ohio Route #95 over Freeway.

Riveted plate girder bridge carries Ohio Route #314 over Freeway.

Welded plate girder bridge carries Township Road #110 over Freeway.

Two parallel beam bridges carry Freeway over Ohio Route #19.

A series of bridges on the new North-South Ohio Freeway, Route #1, now under construction, is being double-protected against corrosion and film embrittlement with Pittsburgh X-L-O Structural Steel Primer. When completed, this highway—costing more than 200 million dollars—will extend from Conneaut to Cincinnati. It will be an important link in U. S. Interstate Highway No. 71.

• **Bridges for the Freeway** in Morrow County were designed by Porter, Urquhart, McCreary and O'Brien, Consulting Engineers of Newark, N. J. The Delaware County bridge was designed by Alden E. Stilson & Associates, Limited, of Columbus, Ohio. Steel for these structures was fabricated by The C. E. Morris Company of Columbus, Ohio.

• **By painting girders and beams** with X-L-O, these shapes were protected against corrosion during shipment and erection. Costly metal cleaning was eliminated. Uniform coverage was assured even over surface irregularities. Rapid drying made possible prompt shipment, regardless of weather.

• **X-L-O also serves** as an excellent foundation which aids final coats to resist damaging weather-wear. It is available in combination of red lead and iron oxide, or 100% red lead.

• **Why not call on us** for advice or suggestions to protect structural steel on your jobs? Write, wire or phone Pittsburgh Plate Glass Company, Industrial Finishes, 1 Gateway Center, Pittsburgh, Pa.

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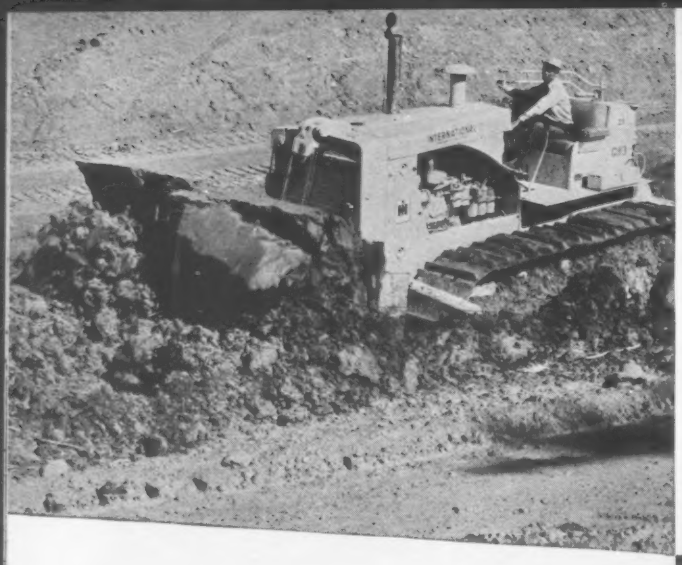
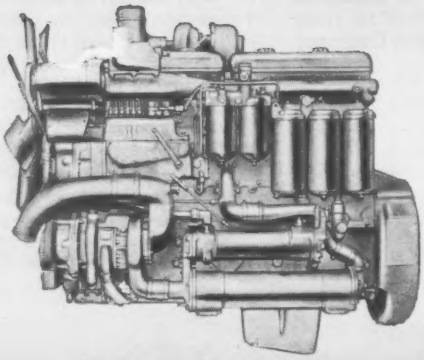


Keep full loads on the move full time with exclusive Planet Power-steering. Full power on both tracks, *full time*, is the answer! And Hi-Lo on-the-go power-shifting lets you match power to condition, instantly, and keep the yard-boosting advantage of uninterrupted momentum.

You speed-up all four steps of the push-loading cycle with TD-25 torque-converter and planetary system teamwork! 1) You slow down by power-shifting down and using decelerator to get feather-touch contact; 2) power-shift either track up or down to maintain solid pusher contact on curves; 3) get gear-higher kick-outs, with on-the-go power-shifting; 4) reposition faster, with higher-than-ordinary reverse! Two "25s" tandem-pushing the International 295 Payscraper®, and the third, scarifying, belong to contractor Ed Bentley, Sylacauga, Alabama — building superhighway near Birmingham.

PLANET Power-steering... HI-LO power-shifting... COME AS standard equipment ONLY in the new TD-25



The International DT-817 engine—single power source used in both *pushers* and *scrapers*—an *industry first* in power standardization. You'll find this big new direct-start, 6-cylinder turbocharged diesel powering the full line of International two and three-axle Payscrapers; Paywagons®; and end-dump Payhaulers.® *Plus* the new TD-25! Dual valving of this high-torque, 230-hp power plant provides for peak turbocharging efficiency, to develop full power from sea level to timberline!

As standard equipment at no extra cost, the new 230-hp TD-25 gives you the International®-proven control combination that has been beating king-sized clutch-steered crawlers in yardage for years!

You get combined Planet Power-steering and Hi-Lo on-the-go, power-shifting exclusively in the new International TD-25. And you get this basic, built-in design advantage in your choice of torque-converter or synchromesh model!

With this and all its other big advantages, the TD-25 can outearn other big rigs up to 50%—on push-loading; and pulling big drawbar tools such as shale-shattering scarifers!

No "dead-track drag" or "gear-shift lag"! Planet Power-steering gives you full-time "live" power and traction on both tracks, to make full-load turns—and to eliminate load-limiting "dead-track drag." And Hi-Lo on-the-go power-shifting instantly matches power to conditions to prevent load-losing "gear-shift lag."

Hi-Lo power-shifting makes the TD-25 the industry's only 4-speed torque-converter crawler and the only one with load-matching efficiency-range control. In the synchromesh transmission "25," the Hi-Lo planetary system gives eight speeds forward and reverse—with cycle-speeding, up-or-down, on-the-go power-shifting with "finger-tip" ease!

Power-shift and power-steer the new "25" with full king-size loads – around curves, upgrade, anywhere. Prove what it means to command full-time, full-load ability to outearn clutch-steered king-sized crawlers, up to 50%. Measure all the "25's" standard equipment extra value features! See your International Construction Equipment Distributor for a demonstration!

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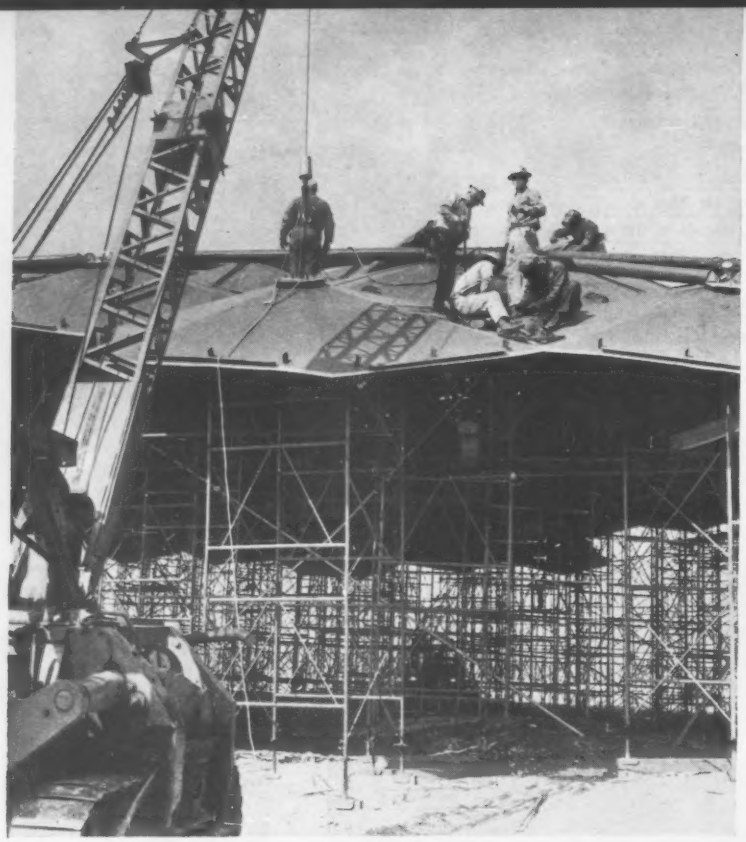
A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers and Bottom-Dump Wagons... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.



Dome top, erected just off ground, formed a cover for . . .

huge nylon curtain containing air to

Building a Dome on Air, From the

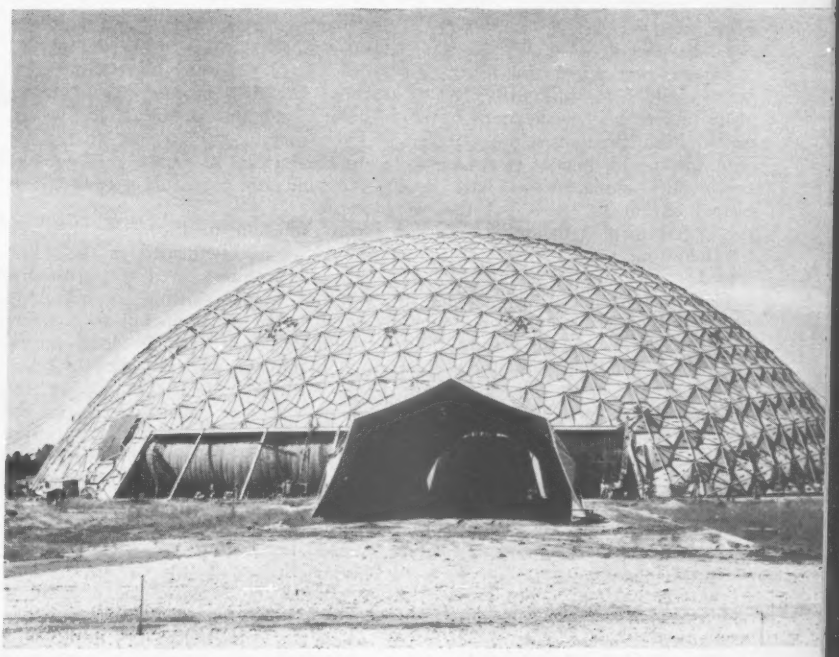
Inside, crew checks curtain hanging from dome to ground.

Outside, panel assembly was . . .

ining . air to support and raise the dome during construction. Jacks only steadied the dome.

on the Top Down *(story continues on next page)*

was . . . . done at ground level.



Completed dome spans 380 ft. Erection took 250 working days.

(story starts on page 28)

. . . Air-lift does the heavy work on dome job

Low pressure air in a huge nylon bag has lifted over 500 tons of steel struts and panels during construction of a 380-ft-dia domed repair shop building in Wood River, Ill. Steel crews working at ground level erected the dome from the top down as the air-lift raised the growing shell.

The 120-ft-high dome contains 893 hexagonal, welded steel panels stiffened outside by a network of 6-in. pipe struts. The windowless building—a railroad tank car repair and maintenance shop—covers 110,000 sq ft of clear floor area. Graver Tank & Mfg Co designed, fabricated and erected the building for its parent company, Union Tank Car Co., Chicago.

This is the second dome-shop for Union Tank. The other was completed last year at Baton Rouge, La. (ENR Nov. 13, 1958, p. 34). The two are the same size and of the same general design. But erection methods were completely different. At Baton Rouge, crews erected the shell with long boom cranes from the outer edge up.

The air-lift system at Wood River worked like this:

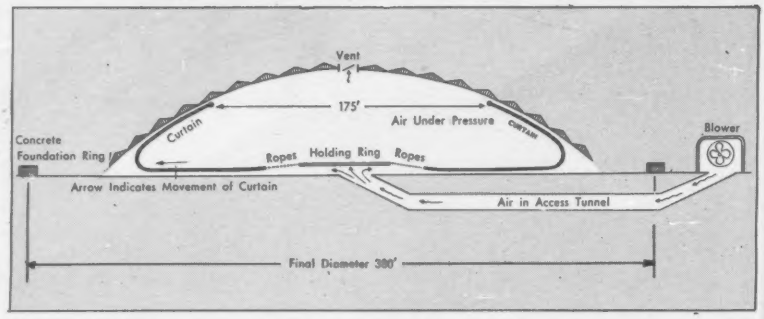
Top center dome panels formed a lid on the circular, bulging skirt of nylon. Crews released the bottom edge of the curtain, gathered on the ground inside the dome and increased air pressure to lift the shell. There were 26 lifting operations during which the dome went up at the rate of 1 in. every 30 seconds.

Known as a pneumatic lifting diaphragm, the $\frac{3}{32}$-in.-thick nylon bag was made to Graver's specifications by Domestic Film Products Corp., Millersburg, Ohio. Pneumatic erection operations of a similar nature have been carried out in the past, but this was the largest diaphragm and the biggest top-to-bottom construction project on record.

Construction began by welding together the top 220 panels—each roughly 15 ft across—on pipe scaffolding. The completed 200-ft-dia lid stood 30 ft off the ground at its center.

Once the lid was finished, workers attached the nylon diaphragm to the underside of the lid in a 175-ft-dia circle.

The ground formed the bottom seal for the diaphragm. Drawn in toward the center of the dome floor, it was fastened by $\frac{3}{4}$-in. hemp rope to a 40-ft-dia holding ring of 4-in. pipe. Outside, the diaphragm was reinforced and restrained by a network of 326 ropes hung from the underside of the dome down the bag at 3-ft intervals and connected to its bottom, inside the edge.



AIR PRESSURE was kept at 1.45 oz. per sq in. to support dome and was raised to 1.6 oz. per sq in. for each of the 26 lifts during construction.

Workmen shifted the dome weight from the scaffolding to a circle of hydraulic jacks placed under the outer panels before the bag was inflated. Then the scaffolding came out.

A 25-hp blower forced air into the lifting diaphragm through an underground tunnel at the rate of 20,000 cfm.

There were two blowers outside the dome. One served as a standby while the other delivered air through the 220-ft tunnel to an outlet at the center of the diaphragm's holding ring. The 4.5-ft-dia air tunnel, a steel plate culvert, also provided access to the interior of the dome for workmen through an airlock.

During panel erection, pressure was maintained at 1.45 ounces per sq in., only slightly above atmospheric pressure. At this pressure, 90% of the dome's weight was supported by air. The remaining 10% rested on the hydraulic jacks. These helped stabilize the dome and prevented it from "floating."

In addition to the jacks, 10 wire rope guy lines—attached to the dome by spreader lines at 120 points—prevented lateral shifting during high winds. The guys ran out to concrete deadmen 306 ft from the dome center.

Air pressure was controlled by a single 5-ft-dia vent at the top of the dome. It was spring loaded and opened toward the inside. If pressure surpassed 1.45 oz per sq in. and lifted the dome, a trip cable from vent release to the ground pulled taut. This opened the vent to let air out. The dome would then settle back, releasing the cable and closing the vent.

Engineers increased air pressure to 1.6 oz per sq in. for lifting operations. This was enough to raise the dome at any stage of construction, because as the dome weight increased, so did the bearing area of the air cushion underneath it.

Lift control was simple and direct. Before a lift, the cable from ground to vent was slackened the distance the dome would rise. This closed the vent and contained all the air until the new elevation was reached. Then the vent opened, halting the lift and signaling for a pressure drop.

Just before each lift, teams loosened the interior holding-ring ropes to let the bag out as well as up.

The restraining ropes on the outside kept the bag a safe distance from the outer, lower row of panels. This was a safety precaution, too, preventing panel welding from endangering the diaphragm.

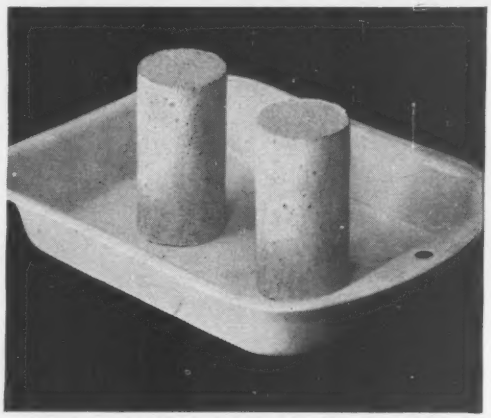
Two balloons, 8 ft and 12 ft dia, were kept inside the bag as an emergency measure. In the event of serious diaphragm puncture they would be rushed into the opening to plug it. But they were never needed. Small punctures in the bag did occur, usually from some sharp object, but air escape was negligible and the holes were easily patched.

Once the dome was on its foundations, surveyors checked to determine any movement of the shell, either radially or vertically. The only appreciable dome movement—from full air support to complete self support—was in its center height, which settled a mere $1\frac{1}{4}$ in.

After welding the shell to the foundation ring, a 200-ft-long "finishing" tunnel was added to the dome. This tunnel will house sand-blasting and painting operations for railroad tank cars leaving the dome after repairs. The 20-ft-high by 40-ft-wide tunnel also is made of hexagonal steel panels. But it was erected from the ground up in a conventional manner.

Estimated total cost of the structure is less than $10 per sq ft of floor area.

BRIXMENT MORTAR
Is More Durable



To compare the durability of Brixment mortar and ordinary cement-and-lime mortar, make a cylinder of each, let them "cure" for a month, then freeze and thaw them for forty or fifty times, with a little water in the pan (the freezing unit of your electric refrigerator will do). See the difference with Brixment mortar!

—AND DURABILITY MEANS PERMANENT STRENGTH AND BEAUTY

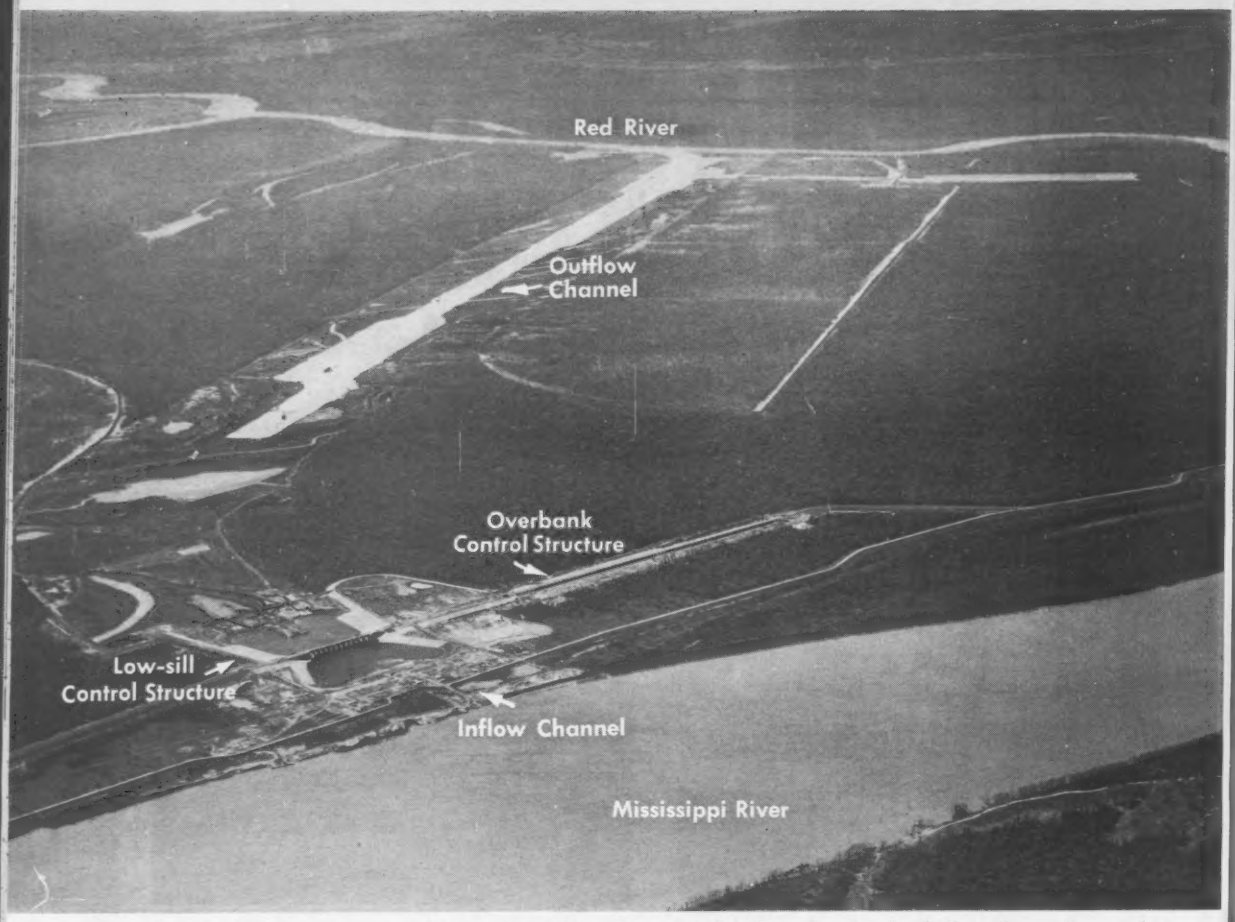
For permanent strength and beauty, mortar must be *durable*—must be able to withstand the alternate freezing and thawing to which it is subjected many times each winter.

Brixment mortar *is more durable.* This greater durability is due partly to the strength and soundness of Brixment mortar, and partly to the fact that an air-entraining water-repelling agent is incorporated into Brixment during manufacture. This helps prevent the mortar from becoming saturated — therefore protects it from the destructive action of freezing and thawing.

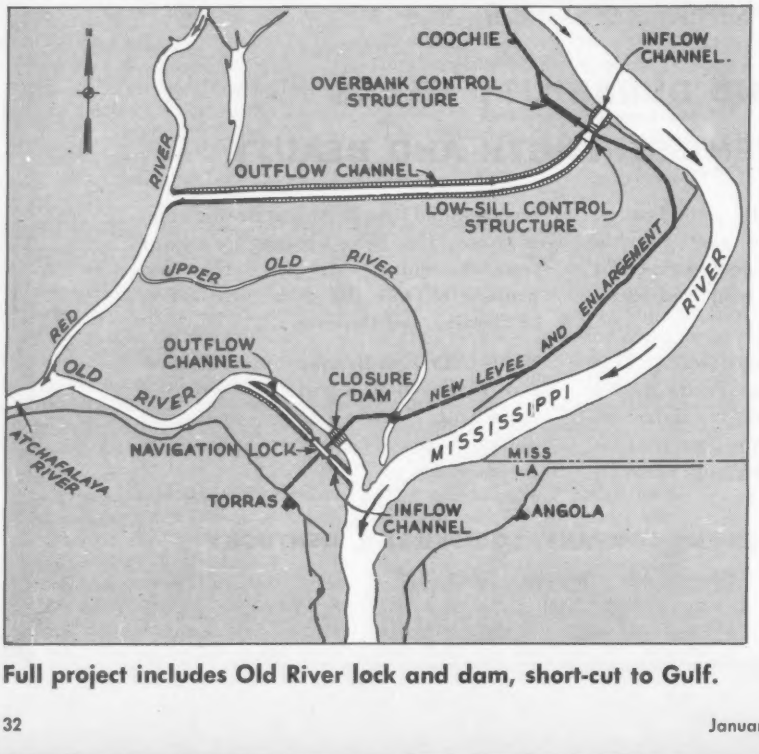
Walls built with Brixment mortar therefore *retain* their original strength and appearance — even parapet walls and chimneys, where exposure is particularly severe.

LOUISVILLE CEMENT COMPANY, LOUISVILLE 2, KENTUCKY

Cement Manufacturers Since 1830



Completed structures erase threat that the river might forsake its bed for that of another.



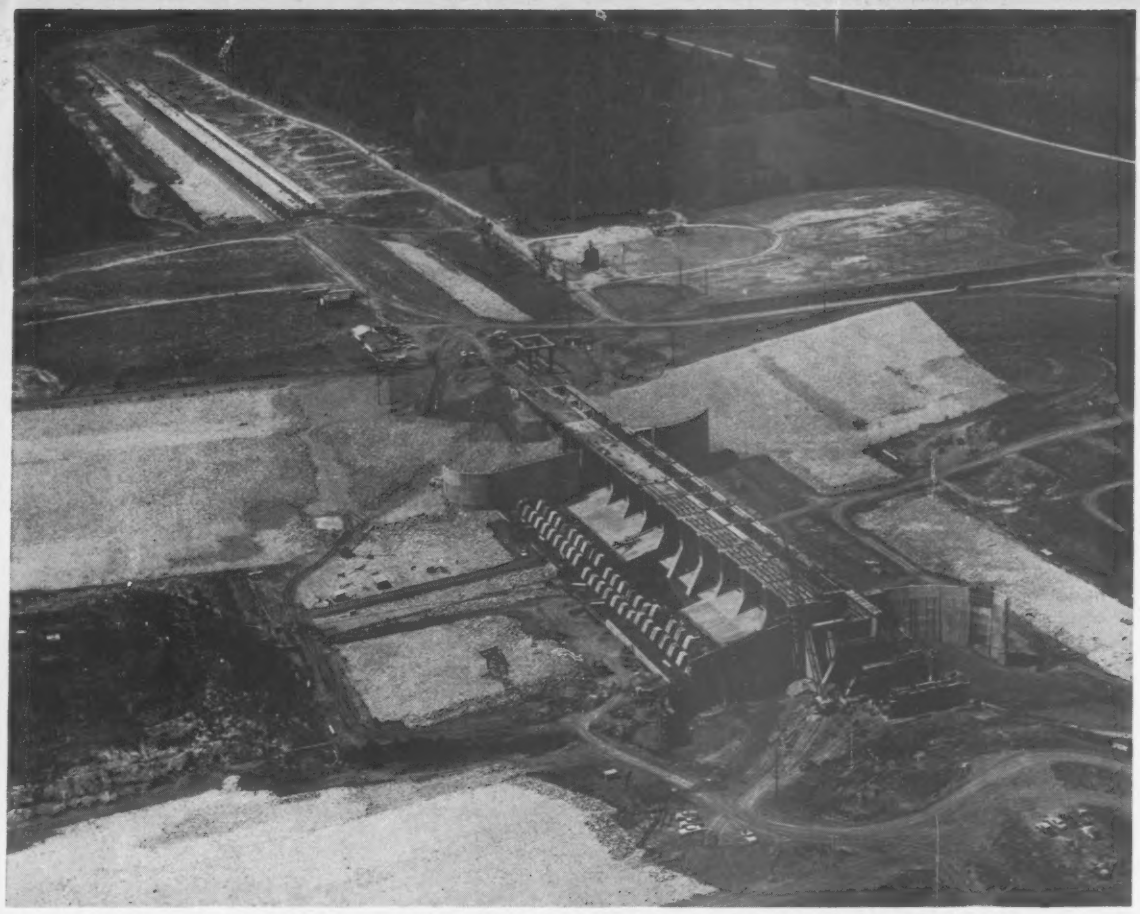
Full project includes Old River lock and dam, short-cut to Gulf.

New Contro

Imagine a disaster of these proportions:

- The nation's second largest port—New Orleans—without its river.
- Salt water 230 miles up the Mississippi at Baton Rouge.
- A billion-dollar investment in new chemical, petrochemical and synthetic plants alone wiped out.
- Bridges, pipelines, railroads and cable crossings stranded.
- A major portion of the flood control plan for the Mississippi, in which $1 billion dollars has been invested, out the window.

Those threats were ended when Army Engineers recently completed the two key works—the low sill and overbank control structures—of the Old River Control Project near Angola, La. With these works in place and operable, Army Engineers now have the means to halt diversion of the Mississippi into the Atchafalaya River—a threat that had become increasingly serious.



Structures now stand ready to control spill, keep the Mississippi River where it belongs.

Dams Remove Threat to Ol' Miss

In the present incomplete state of the project, emergency action to halt the diversion would be on an improvised basis. But it would work. Some months ago (ENR Apr. 8, 1954, p. 36), this question was posed, "Will the Atchafalaya Capture Old Miss?" The answer is now, "No."

The $80-million Old River Control Project is about 40% complete with $30 million spent so far. Only the control works are finished, although impressive progress has been made on the supporting complex of channel dredging, levee building and the like.

Construction of a lock is just getting well started. Still four years off is the central feature that will pull the whole sprawling job into focus—a dam that will block Old River and thereby prevent the Atchafalaya from capturing the Mississippi.

But with the overbank and low sill structures available to handle Mississippi-Atchafalaya flows, Army Engineers can now, even without the dam, halt the diversion if it becomes imminent. They could quickly establish emergency measures to keep the Mississippi in its place. It is beside the point that the now-available measures would block barge traffic between the Atchafalaya and the Mississippi for a couple of years. What counts is that the continuance of an established way of life for the lower basin has now been assured.

This work and this threat are located in an area known to residents as the Three Rivers. Here, within six miles of each other, are the Mississippi, the Atchafalaya and the mouth of the Red. Interconnecting all three is a short length of a stream known as Old River. If the area is small, the implications are tremendous.

In this Three Rivers area there existed a situation familiar in Mississippi River history. The situation occurs when a nearby stream, offering a steeper gradient and a shorter route to the sea, sends a migrant meander loop to intersect the main river and become its distributary. Slowly at first and then at an accelerating pace as balance is upset, the distributary carries a larger and larger proportion of the main river's water, until finally, complete capture comes with a rush.

The Old River situation fit this classical pattern in all its details. Its trigger is a gradient of the Atchafalaya more than twice as steep as that of the Mississippi (it is 140 miles on the Atchafalaya from Old River to the Gulf near Morgan City as compared with 313 miles to the Gulf on the Mississippi via New Orleans).

Formerly, the Atchafalaya was a stream so inconsequential that old timers from habit still refer to the Three Rivers area as "the Mud Hole." The Old River was a two-way stream: When the Red was high, Old River flowed into the Mississippi; when the Mississippi was in flood, Old River reversed

its direction to flow into the Atchafalaya.

Now the consistent flow is from the Mississippi into the Atchafalaya. The volume has increased until the Atchafalaya has become one of America's largest rivers flowing into the sea.

Without the control works, the shift inexorably would go full cycle. Currently the Atchafalaya carries 27% of the Mississippi's annual flow. The threshold of the critical phase would have been reached when the proportion went up to 40%. Shortly thereafter the point of no return would have been passed and the diversion would have been beyond prevention. This shift could have occurred in 1968, was most likely to have taken place by 1975 and certainly would have happened by 1985. All of which gives point to the safeguard that became available with the control works' completion.

In dealing with the threat, Army Engineers had to consider the Atchafalaya's dual role. If the river is an instrument of potential catastrophe, it also plays a constructive role as a carrier of commerce and a tool of flood control. The Atchafalaya is a short cut that carries an increasing tonnage of oil and chemicals moving from Louisiana and Texas to upriver ports. More important is its role in time of flood. The Mississippi's projected flood at Old River's latitude is 3 million cu ft per sec. The lower Mississippi can carry only half of this. The Atchafalaya and its drainage basin are expected to dispose of all the remainder, with 700,000 cfs handled at Old River.

The conflicting attributes of the river determined the design and function of the complex of structures that make up the Old River Control Project. Each deals with a separate facet of the problem; together they work as a team to curb the river on one hand and to utilize it constructively on the other.

• **Low sill structure**—The function of this structure is to control, day by day, the flow of water from the Mississippi into the Atchafalaya. Of concrete construction, it is 560 ft between training walls, stands 80 ft tall and consists of 11 bays, each 44 ft between piers. Sill elevation of three of the bays was dropped to El −5 to permit flow into the Atchafalaya during extremely low water. For economy of excavation, the weirs of the other bays are at El 10. Control is with fixed-wheel roller-type gates. Four gates are stacked one atop the other in the low bays and three gates are used in the others. They are served by a gantry of 200-ton capacity. The whole structure is founded on H-beam piles with a maximum length of 130 ft, and a minimum penetration of 30 ft in sand, which is at El −60.

LOW SILL STRUCTURE is series of large flood gates. Tall steel falsework held forms for casting crane-rail beams along its top.

Constructed by the F & C Engineering Co. of Houston, the structure proper will cost about $10 million. This is exclusive of $650,000 for the steel gates and $260,000 for the gantry. The structure has a wide variation of capacity, ranging from record low flows to 350,000 cfs in time of flood.

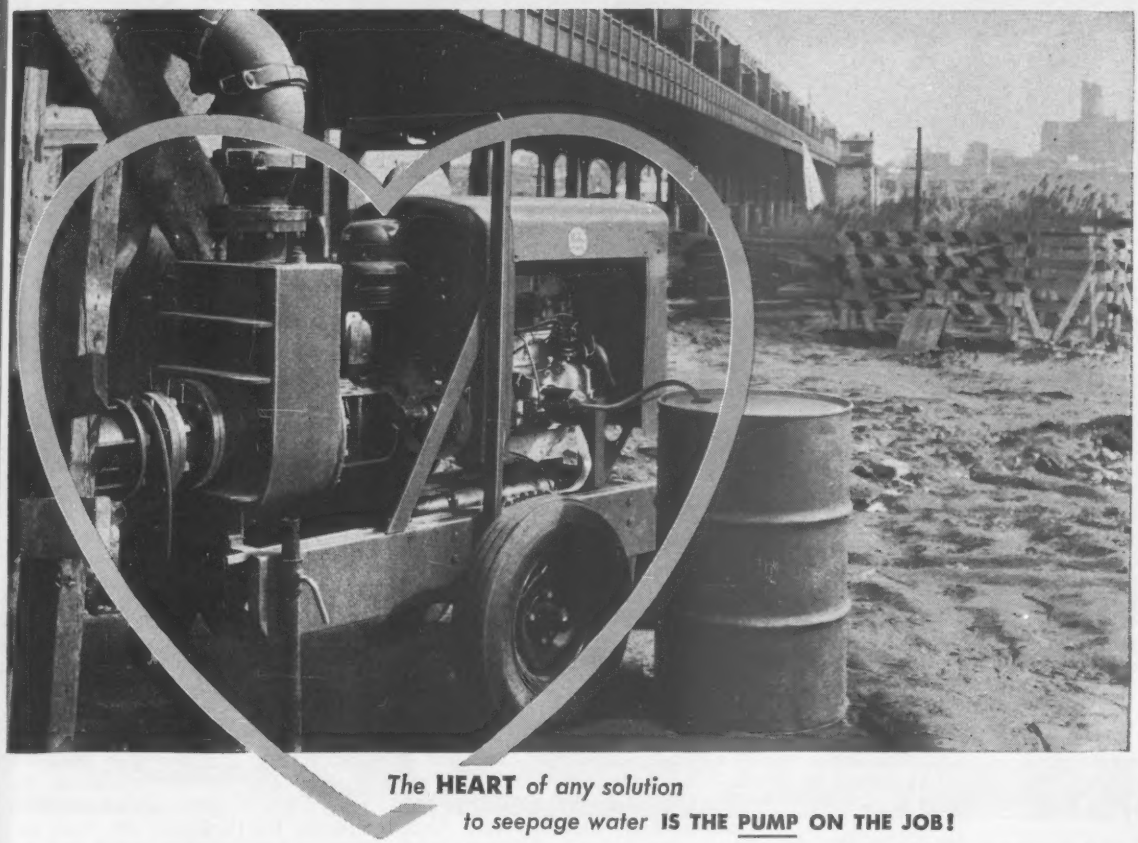
• **Overbank structure**—The area interlaced by the Atchafalaya, Red and Ouachita rivers is a swampy wasteland with a spongelike capacity to absorb and retain flood water, which it later allows to escape at a harmless, leisurely pace. The overbank structure, which will function only in time of flooding, will spill the Mississippi's water into this great natural reservoir when bankfull stage is reached. Similar to the Morganza control structure in design, it is 3,356 ft long and has 73 bays, each 44 ft between piers. Control is by wooden needle-type gates, working on a hinge, that are served by two 15-ton gantries. The structure has a slab footing founded on natural soil, but no piling. It has a concrete cutoff wall on the upstream (Mississippi) side and gravity drains of 8-in. perforated pipe in each bay. Contract cost was $5.2 million. Construction was also by F & C Engineering Co.

• **Levee construction**—The sprawling nature of the project will require nearly 18 miles of levee to safeguard it. All but four miles of this is enlargement of existing levee. Minimum fill height required will be 20 ft while maximum will be around 60 ft; the yardage involved totals 5.3 million. Two miles of the levee was placed by the F & C Engineering Co. with spoil from control structure excavation. Another stretch of the levee work was contracted to the Atlas Construction Co. of Vidalia, La. Total levee cost will be in the $2 million to $3 million range.

• **Outflow channel**—Function of this channel, on which a dredge has been chewing away for nearly 2½ years, is to lead water overland from the low sill structure to the Red River (from there it moves into the Atchafalaya). This channel, roughly paralleling Old River and about 10 miles from it, is seven miles long. Quantity to be removed is 67 million cu yd. The channel is to have a 900-ft bottom width with side slopes ranging from 1 on 4 to 1 on 8. About a third of the channel runs through an area of highly erodable silt.

In this reach the dredged section is being held to pilot-channel width of 450 ft in the expectation that the flow of water will enlarge the channel to full cross section. It is estimated that 12 million cu yd of dredging will be saved by this wrinkle. Dredging is in six items, all of which went to the McWil-

ABRASIVE, FLY-ASH-LADEN WATER
no problem for a MARLOW!



The **HEART** *of any solution*
to seepage water **IS THE PUMP ON THE JOB!**

The Roosevelt Avenue Bridge, over the Flushing River in Flushing, New York, carries trains of the city's transit system, as well as heavy highway traffic. Recently, it was noticed that the structure was sinking, endangering both highway and train travel. To correct this, a contract was issued by the Department of Public Works of the City of New York to the Woodcrest Construction Company for the reconstruction of the West approach to the bridge.

When the two-decked structure was originally built, it used wood piles sunk 70 feet below grade. As the ground on the site is mostly filled with fly-ash from incinerators, new steel piles were driven to between 100 and 120 feet below grade to properly support the new bridge abutments.

Seepage from the nearby river became a very serious problem when digging excavations for the abutments. In addition, the abrasive nature of the fly-ash fill could cause trouble to the pumps. To solve *both* problems, Ed Good, General Superintendent for Woodcrest, set up a 6E4 Marlow Contractors Pump. Running six hours a day, this 90,000 GPH, self-primer, sold by Foundation Equipment Co., completely controlled the onrushing water. The 360° cleaning action of the Marlow kept the casing clean and, because there were no close clearances in the pump to wear, the abrasive liquid caused no trouble in the units. Ed Good had used Marlows for some time and *knew* they would perform without trouble.

Marlows can help solve your construction pumping problems. There's a unit from Marlow's complete line of self-priming and diaphragm pumps that's just right for your job. Write today for the name of your Marlow dealer and a copy of Marlow Contractor Pumps Bulletin C-09.

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9-473

. . . Old River control now assured, lock and dam come next

DREDGE EXCAVATES FOR LOCK which is now under construction. In background is Mississippi; to the left flows Old River, which will be dammed here.

liams Dredging Co. of New Orleans. Dredging contract total to date is $11.1 million; estimated total dredging cost, including the inflow channel, is near $15 million.

• **Old River dam**—This hydraulic fill structure, on which work is to begin in 1963, has been saved for last so that navigation will not be impeded. During the winter high-water season an underwater rock sill will be constructed to El 20 across Old River. (Rock, incidentally, is a scarce commodity in alluvial Louisiana; the 200,000 cu yd of derrick stone used downstream from the control structures were barged 715 miles on the Tennessee, Ohio and Mississippi rivers from Smithville, Ky.) In the spring, the control works will take over the flow, and dam embankment proper will be placed by dredge on top of the rock sill. The section will be about 100 ft high and will be placed as an integral part of the levee ringing the project on the Mississippi side.

• **Lock**—The $14.7-million contract awarded Brown & Root of Houston for the lock's construction was the largest single contract in the New Orleans District's 92-year history. Construction is just getting well under way, although preliminary dredging was carried out previously. The lock, 1,200 x 75 ft, will have walls of the substantial height of 80 ft—made necessary by the extent of the river's fluctuation—but the lift will not exceed 37 ft. The Old River lock (and the Port Allen lock near Baton Rouge, now nearing completion) is unusual in that it is not founded on piling but is supported by the underlying silt and sand. The two locks are, in effect, drydocks are set on silt and on sand.

This design necessitates precautions against uplift and deflection both during and after construction.

Concrete placement is carefully spelled out. The 12.5-ft thick base slab is placed in three lifts, each 22 to 24 ft long and extending the full width of the lock. To keep weight spread after a monolith is placed, the next vertical lift must await the placing of the two adjacent base monoliths. Thus the top lift would be the apex of a triangle with a base five monoliths wide. The walls at either side have to come up simultaneously to hold weight even.

Similar care is required in foundation preparation. Material under the base slab must be uniform in make-up. That is no problem, since the lock goes 20 ft into a sand stratum—undefiled by any lenses of foreign material—that extends clear down to the tertiary clays. Both the sand and impervious soil have to be brought to optimum density where prescribed. With the sand, this will be achieved by flooding and walking the sand with tractor type equipment. Tamper-type rollers will be used to achieve density of the impervious clays.

The weight of the structure and the supporting ability of the sand are carefully balanced. Extensive precautions are taken against uplift. A steel sheetpile cutoff on the Mississippi side will discourage seepage, as will impervious clay blankets at the sides. Sand will be wrapped around the lock walls so that groundwater will go up and down with the water in the lock itself to minimize hydraulic pressure.

Deep wells will ring the lock to dewater the area while work is going on. There will be 37 wells in all. The effectiveness of wells for this purpose was demonstrated by their use on the low sill structure. Thirty wells were sunk into the deep sands that underlie the low sill structure at El −60. The 8-in. wells went down to El −122 with 30-ft screens. Maximum amount of water pumped was 13,500 gpm. On the lock it is expected to be 30,000 to 40,000 gpm. During the sill structure's construction, maximum stage in the Mississippi was 52 ft above MSL.

• **Many benefits**—Aside from the direct benefits of the project itself, the Old River job will bring a substantial auxiliary gain to that area of Louisiana. The control structures were designed for a 12-ft top. The State of Louisiana financed the cost of broadening the top's width to carry a 26-ft roadway. It will pay for thickening the levee section to have a 40-ft crown and for holding curves to highway standards. State Highway 131 will be routed over the levee and control works to provide access for an area that has lagged economically for want of roads. The highway will provide a 55-mile route connecting the Natchez-Vidalia area at one end and the Simmesport-Morganza-New Roads region at the other. As things now stand, residents must make a 150-mile trip through Baton Rouge on the opposite side of the Mississippi to get from one region to the other.

The Old River project is being carried out by the Mississippi River Commission with the New Orleans District of Army Engineers in direct charge. Adolph Hedegaard is project engineer for Army Engineers; C. B. Johnson is assistant project manager in charge of structures; C. C. Cassels is assistant in charge of dredging, levees and revetments. Contractor supervisory personnel were Frank Mitchell for F & C, J. E. Quillen for Brown & Root, V. J. Flynn and E. L. Hendry for McWilliams and W. E. Johnson for Atlas.

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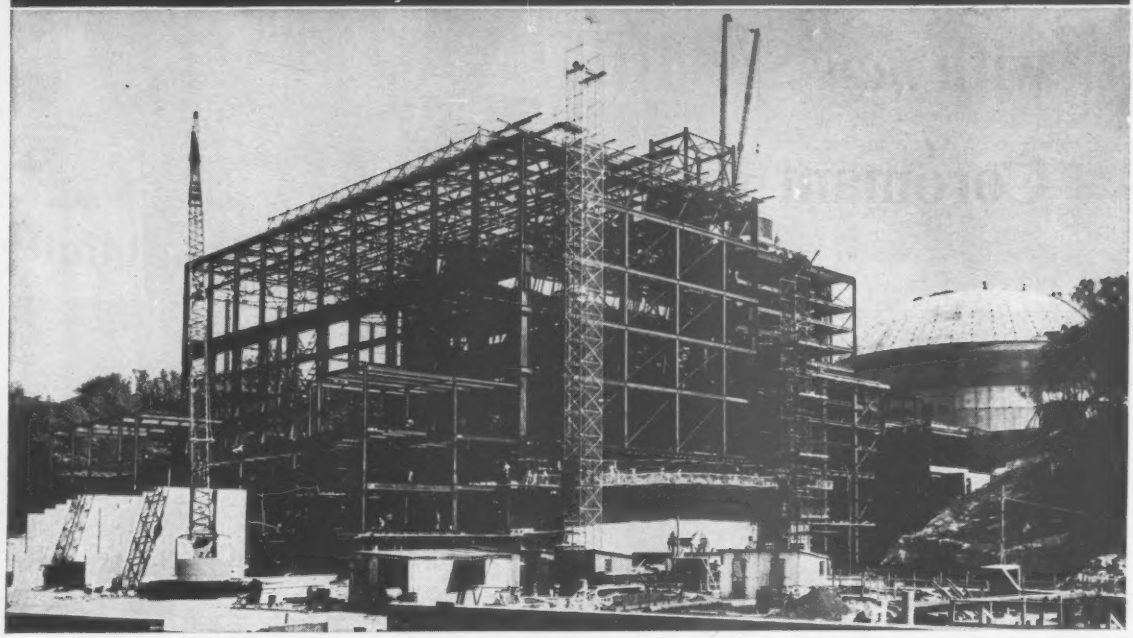

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Almost 8,000 tons of structural steel for Con Edison's 275,000-kilowatt Indian Point plant was fabricated and erected by Ingalls. The superheater and turbine room section required 6,000 tons of structural steel . . . and 2,000 tons were fabricated and erected inside the nuclear containment sphere, shown on the right of photo above.

Ingalls' skill, ability and experience with fabricated steel have been employed on many power plant jobs, including the construction programs of 46 of the nation's leading power companies.

If your company is considering a new power house, or expansion of present plants, you will do well to investigate Ingalls' facilities. Write us today.

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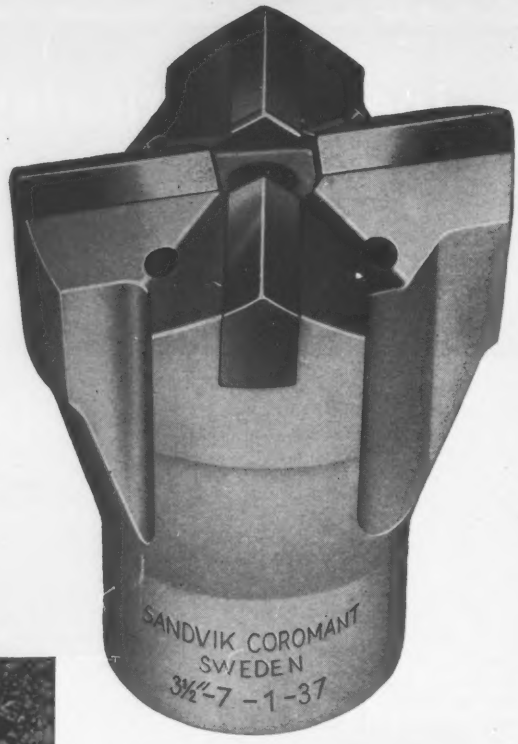
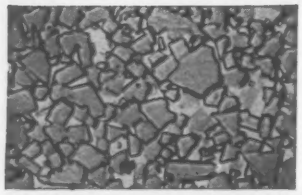
Longer bit life— with *new* Sandvik Coromant Bits





Sandvik Coromant Tungsten Carbide (Microphoto) Uniformity of size, even distribution of grain are marked. Free from porosity and impurities —therefore stronger, longer-lived.

Low quality Tungsten Carbide (Microphoto) Black marks are contaminations caused by deficient production control. They weaken the carbide, reduce its working life.

NEXT time you buy bits, specify Sandvik Coromant because they give more footage per bit, lower drilling costs. Here's why:

1 Only first-quality tungsten carbide is used —as shown in the microphotos above. This means less wear, longer life and a better job.

2 The bodies are precision-made of high quality alloy steel—tough enough to take the strain throughout the extra-long bit life.

3 The bigger Sandvik Coromant bits are all of X-design, which prevents rifling. No wonder Sandvik Coromant inserts are the most widely used in the world, drilling more than one billion feet every year.

SANDVIK COROMANT bits are supplied through Atlas Copco, the world's largest manufacturer of rock drills, who also supply Sandvik Coromant integral steels — the most widely used in the world — and Sandvik Coromant extension steel equipment.

Sandvik Coromant Detachable Bits are Available in the following Thread Sizes and Bit Diameters

Type	Thread	Available Diameters, in Inches														
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SHOULDER	TAPER	x	x	x	x													
	F		x	x														
	113		x															
	H			x	x	x	x	x		x								
	115			x	x													
	D						x	x	x	x	x	x	x	x				
	K													x	x	x	x	
BOTTOMING	1" Rope				x	x	x	x		x								
	1⅛" Rope						x	x	x	x		x		x				
	400						x	x		x		x						
	1½" Rope											x	x	x	x	x		
	600											x	x	x	x			
	700													x	x			
	J 7.5															x	x	
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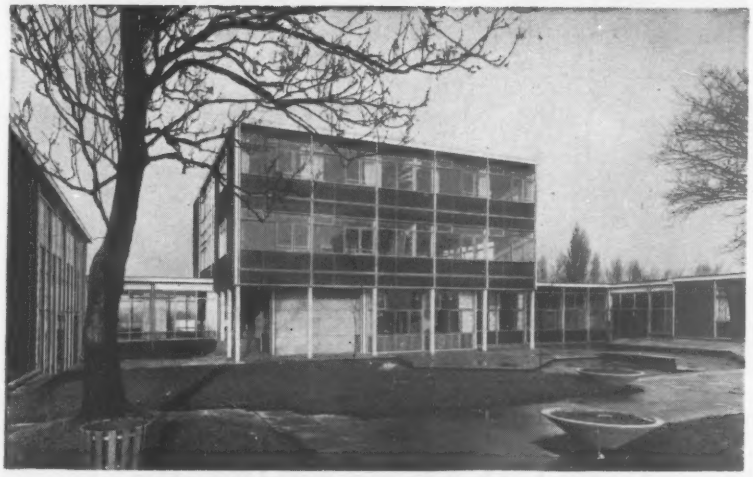
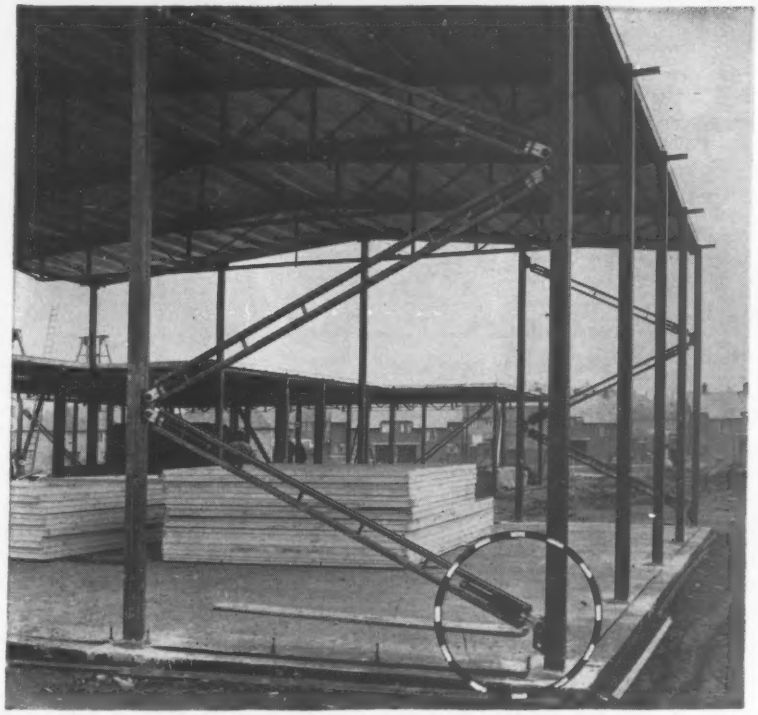


Building Over Coal Mine . . .



. . . Yields as Ground Settles

How do you support a building erected on subsiding soil? That was a problem faced in the coal mining center of Nottinghamshire County, England.

Most of the county's school buildings had to be located in mining areas. Ground subsidence sometimes stretched the earth's surface 4 in. per 100 ft horizontally and settled differentially several inches.

Efforts to design rigid superstructures on stable, deeply-excavated foundations had failed.

County designers, trying a different approach to the problem, provided for horizontal and vertical movements separately:

- A flexible structural frame adjusted the building to vertical settlement.
- A slab-on-ground resisted horizontal movement and allowed subsiding soil to slide under the structure.

The major requirement was to keep the steel columns parallel under all conditions. If this were not done, the frame joints could lock and fail to accommodate future movement.

The answer was to hinge the column bases on pins grouted into the ground floor slab. Diagonal members with hinged joints and stiff springs at each end, (see photo) brace intermittent bays for lateral loading.

Under wind loading these braced bays remain rigid. But under the tremendous force of earth subsidence the springs yield, and the frame takes a new shape. Spring tension then holds the frame in its new position until the inertial forces of subsidence act again.

The ground floor slab was designed to act like a sheet of paper—flexible but tension resistant. Construction joints were painted with bitumen. This allowed rotation at the joints, permitting the slab to follow contours of the settling subsoil.

Continuous welded wire fabric in the center of the slab on grade resists the tensile force of soil sliding under the slab. Experience in the area has established 180 ft as a practical economic limit for tension reinforcement of ground-floor slabs.

The flexible frame posed formidable problems in designing exterior walls, partitions and windows.

General solution for walls was to allow panels to overlap at horizontal joints. Joint details were varied to suit the different materials in use (e.g. tile, precast concrete, and steel panels).

Precast gypsum partitions, being rigid, are connected to columns with flexible joints.

Side-hung windows, designed with necessary tolerances, performed better than other types in tests. A test window, 10 ft wide, went 3 in. vertically out of square, but its fixtures still worked.

Test of a two-story frame unit confirmed the new approach before its use in construction. Screwjacks mounted under columns forced them 4 in. out of horizontal alignment. The springs pulled the building back into plumb after movement stopped.

The flexible buildings have performed so well that their use has spread to South Wales and other English communities with similar soil problems, according to W. D. Lacey, Architect to the Nottinghamshire County Council.

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Small Relief Maps in Plastic

Aero Service Corp., Philadelphia, is offering plastic type relief maps of the World and the U. S. in the new small size of 28x18 in.

Best known for its worldwide operations in aerial surveying, the company has previously made a large (64x40 in.) plastic relief map, of which these new maps are accurate copies. The small maps, mounted in wall frames, contain a pull-out index that locates all of the place names shown. They cost $9.95 each, compared with $47.50 for the larger size.

The new maps are printed on a vinyl plastic, durable enough to stand the roughest handling. They are also plastic coated to protect the colors against dirt. Mountains and valleys on the maps are detailed in relief that reaches a maximum of about ½ in.

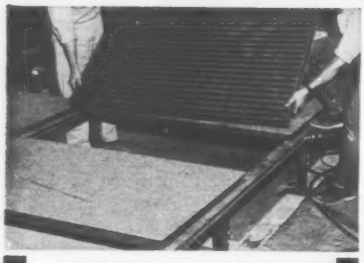
The U.S. map, showing all fifty states, contains 4,000 geographic names —cities, rivers, mountains, etc.—on a scale of 1 inch equals 117 miles. The World map, with about 2,500 geographic names, has a scale of 1 inch equals 962 miles.

Versatile Hydraulic Excavator

A self-propelled, two-engine hydraulic excavator combines over-the-road speed with on-the-job maneuverability. The machine has travel speeds up to 40 mph.

On the job, a declutch in the drive shaft permits coupling of hydraulic drive for remote control from the operator's cab at the rear of the unit. Steering, forward and reverse travel, and setting of hydraulic outriggers can be accomplished from the rear cab. The upper works revolve 360 deg.

Standard attachment for the unit is the Hydra-Scope, with a telescoping boom that has a reach of 20 ft from center of swing with a telescoping action of 7 ft. The end attachment can be rotated 90 deg either side of centerline of the boom. Bucket capacity is ⅜ cu. yd. All operations of the upper mechanism are hydraulically controlled. Telescoping crane and backhoe booms are also available, as are other end attachments. DAVIS ENGINEERING, INC., P O BOX 127, DOWAGIAC, MICH.



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Here's proof of acceptance—proof that Maxon Dumpcrete Concrete Spreaders can sharply reduce paving costs with their "90-seconds-from-truck-to-slab" cycle. This is just a partial list of leading contractors who used the Dumpcrete Spreader last season. Most took full advantage of the benefits of central-mixing by using Dumpcrete Bodies... some used transit-mix trucks.

But the Dumpcrete Spreader paid off both ways. It can for you, too. It spreads, moves and strikes-off a 5½ cu. yd. load in *30 seconds.* (Dumpcrete Bodies load it in 60 seconds.) Places base course, top course or full depth. Paving widths are adjustable from 11 to 16 or 20 to 25 feet. Handles concrete of lowest slumps. Simple design and rugged construction hold maintenance to a minimum.

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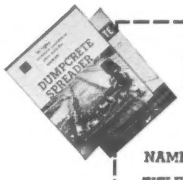

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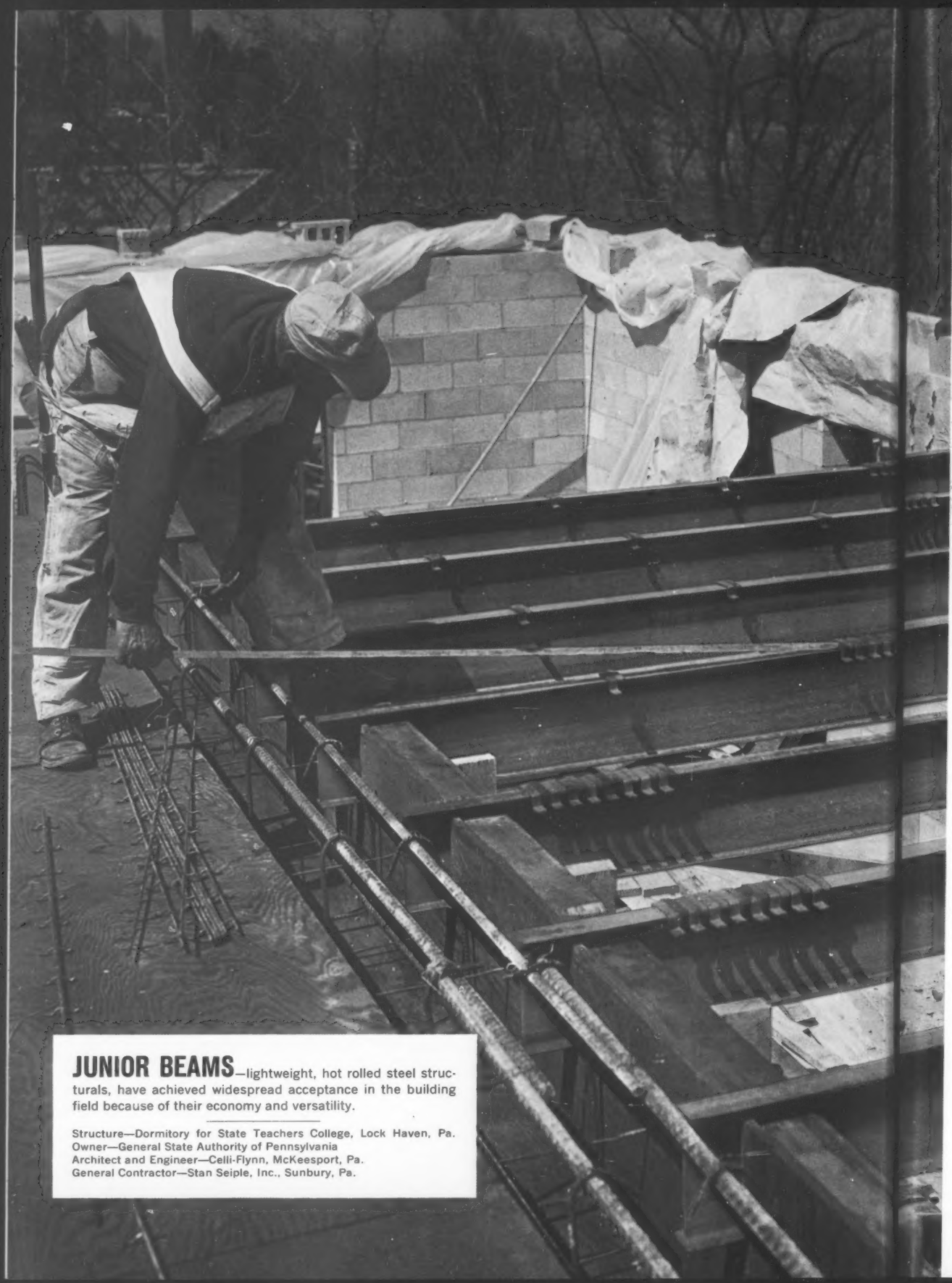


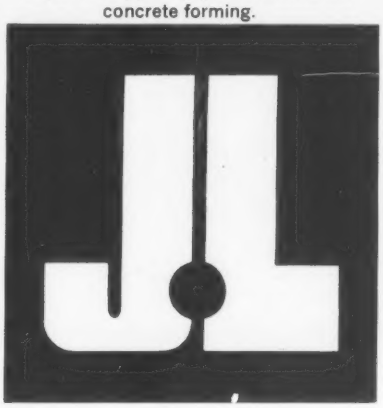
JUNIOR BEAMS—lightweight, hot rolled steel structurals, have achieved widespread acceptance in the building field because of their economy and versatility.

Structure—Dormitory for State Teachers College, Lock Haven, Pa.
Owner—General State Authority of Pennsylvania
Architect and Engineer—Celli-Flynn, McKeesport, Pa.
General Contractor—Stan Seiple, Inc., Sunbury, Pa.

Junior Beams are fitted with special K-clips to support plywood forms for concrete forming.

Concrete floor gets the finishing touch. Plywood forms are removed from below by breaking off exposed section of K-clips.

All intermediate floor and roof members in the structure are J&L Junior Beams.



Junior Beams are produced by J&L in 6″, 7″, 8″, 10″ and 12″ sizes in A-7 and high tensile grades.

College dormitory erected for less than $3,000 per bed

"We attribute a major share of cost reduction to the Junior Beam floor framing system"

. . . reports Celli-Flynn, Architects and Engineers

"This is the lowest cost-per-bed project of nine comparable dormitories built in recent years on the campuses of Pennsylvania State Teachers Colleges," says a partner in the firm. "This savings was accomplished despite increased material and construction costs and the low figure includes the extra expense of built-in furniture."

All intermediate floor and roof members in the structure are J&L Junior Beams, while the main structural frame is reinforced concrete. Here, significant labor savings were achieved because lightweight Junior Beams were raised and positioned rapidly, and were delivered to the job cut to length.

Additional time was saved through the use of an unusual method of forming the concrete floor. This method, known as the K-System, utilizes special cast iron K-clips which are fitted to the top flange of the Junior Beam. The clips support 24″ x 96″ plywood forms between the beams.

Investigate Junior Beam—K-System construction. Junior Beams are easily adapted to a wide range of architectural design. For further information consult your local steel service center, your nearest J&L district sales office, or write directly to Jones & Laughlin Steel Corporation, 3 Gateway Center, Pittsburgh 30, Pennsylvania.

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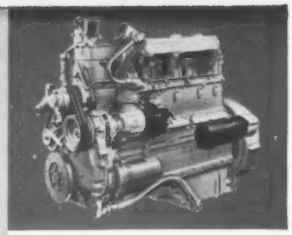
A truck quality-built for *toughest* construction jobs!

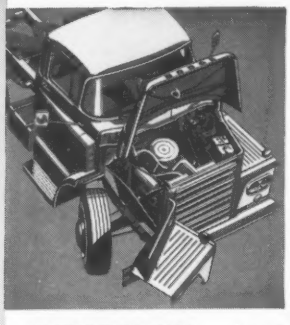
1960 Dodge Cab-Forwards offer new gasoline V-8 engines and four big Cummins diesels. Strong new heat-treated chrome-manganese frames, aluminized mufflers, big 14- and 15-inch clutches. And a whole line of new transmissions, with up to 20 speeds forward!

Big choice of models includes tandem and single-rear-axle types. Many wheelbases of ideal length for dump, rock and mixer bodies. Tractors, all the way up to 76,800 lbs. G.C.W.!

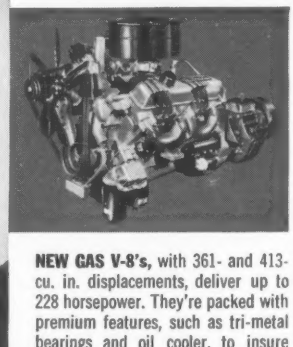
Check the new Dodge "big ones" now. Your Dodge dealer's is the place . . . and delivery is quick!



CUMMINS DIESELS are now available in Dodge for big fuel savings and extra stamina in construction hauling. Four engines available, with displacements from 464 to 743 cu. in.; horsepower to 220; torque to 605 lb.-ft.



SERVI-SWING FENDERS . . . Newest idea in engine servicing! Just flick a latch and these fenders open outward, making the engine easy to reach from either side. Check oil, water, battery without raising the hood!



NEW GAS V-8's, with 361- and 413-cu. in. displacements, deliver up to 228 horsepower. They're packed with premium features, such as tri-metal bearings and oil cooler, to insure peak performance and long life.

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C. Patterson, G. LaPorte Named Perini Executives

Promotions in the Perini Corp. bring Charles J. Patterson and George S. LaPorte Jr. into executive positions.

Mr. Patterson has been appointed vice president for corporate relations and executive assistant to the president. Mr. LaPorte is the new manager of the industrial and commercial development division.

Mr. Patterson joined the company in 1947 after graduating from the University of Notre Dame. Since then he has been in the office of the president, first as secretary and, after 1957, as special assistant. He is also editor of the company newspaper.

Mr. LaPorte comes to Perini from Cabot, Cabot & Forbes Co., Boston. For the past five years he has been working as a consultant on industrial planning and construction.

Wyoming Highway Division Shifts Three Engineers

Three highway engineers have been promoted to district engineer posts in the Wyoming Highway Department.

M. A. VerBrugge is the new district engineer at Cheyenne. He has been with the department for 32 years, and is being moved up from assistant state materials engineers.

John E. Walter has been promoted from district maintenance engineer at Basin to district engineer.

He has been with the department for 22 years.

A. V. DeBernardi, a veteran of 12 years service, has been named district engineer at Rock Springs.

Arthur D. Bird Appointed To City Engineer Position

Arthur D. Bird is Cincinnati's new city engineer, replacing T. J. Montgomery, who has retired.

Mr. Bird started with the municipal office in 1929 while a student at the University of Cincinnati. After graduating in 1933, he became a junior draftsman working his way up to principal engineer in 1951. He has been involved with the city's $60-million expressways and $50-million sewage programs.

During World War II, he supervised construction of naval facilities in New Caledonia, Guadalcanal, Russel Islands, Green Islands and New Zealand.

Careers

Business

Louis E. Rydell has joined the staff of Harza Engineering Co., Chicago, on an assignment in Pakistan. He has been chief of the planning branch of the Walla Walla district of the Corps of Engineers. In his new position Mr. Rydell serves as resident manager in Pakistan preparing plans for a development of the Indus River. He has been with the Corps for 25 years and has also served on the Oregon state hydroelectric commission.

D. Reid Ross has joined the Hamilton Co. as vice president. Mr. Ross, who has been active in urban renewal work, took an active part in the formation of the Cincinnati Renewal Corp. He has also been executive secretary of the Better Housing League. In his new post, Mr. Ross will work on the construction of low-cost housing in Puerto Rico.

Walter A. Gardner takes over as vice president in charge of engineering for the Harrison Engineering Co., Gastonia, N. C. He has been superintendent of the city water and sewer department since 1954.

John Findlay is general manager of Arthur G. McKee & Co., Toronto engineers. He has been with the office since 1956, first as job supervisor and then as projects supervisor. He succeeds **Carl L. Nilson,** who has been transferred to the company's office in Union, N. J.

Charles R. Graff has been named assistant vice president in charge of west coast operations for the Raymond Concrete Pile Co. He succeeds **Otis C. Struthers,** who has retired.

Harold E. Rowen has been elected a vice president of the McDowell Co., Cleveland engineering and construction company. In his new position he directs the company's Dwight-Lloyd division, a subsidiary of McDowell.

The Cleveland architectural firm of **Garfield, Harris, Schafer, Flynn & Williams** has shortened its name to **Schafer, Flynn & Williams.** The change follows the death of Abram Garfield and the retirement of George R. Harris.

Herbert J. Mayer has been named a partner of the Edward R. Bacon Co., San Francisco construction machinery distributors. He is also executive vice president of Western Machinery Co.

Gordon L. Burt has joined Metro Engineers, Seattle, a group of four consulting firms retained to design the $55-million Seattle sewage project.

(*Continued p. 46*)

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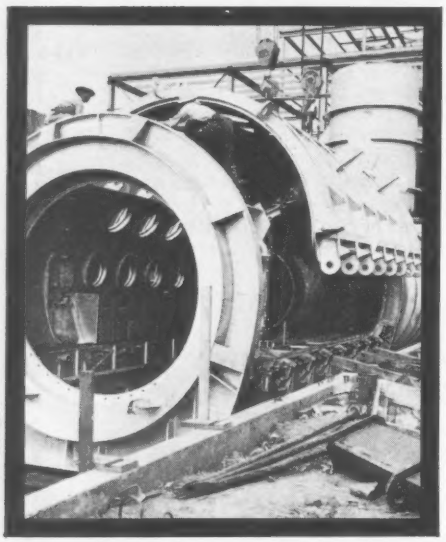

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Associations

Dan Shirvin has been re-elected president of the Kentucky State Building and Construction Trades Council.

James T. Holden has been named Ohio division engineer for the National Corrugated Metal Pipe Association. He has held the position of Licking County engineer at Newark, Ohio, for the past eight years.

Paul B. Benden, Jr., Ohio brick manufacturer, has been elected president of the Structural Clay Products Institute for a one year term.

Harry Aviron, vice president of Lipsett, Inc., has been elected president of the Wrecking Contractors Association of New York.

Nathan R. Ginsburg has been elected president of the New York Society of Architects.

C. M. Courson, superintendent of the Tampa sewage plant, has been named president of the Florida Sewage and Industrial Wastes Association, a state section of the American Water Works Association.

Robert L. Moore, superintendent of engineers, Lumbermens Mutual Casualty Co., Chicago, has been named general chairman of the National Safety Council's Construction Section Executive Committee.

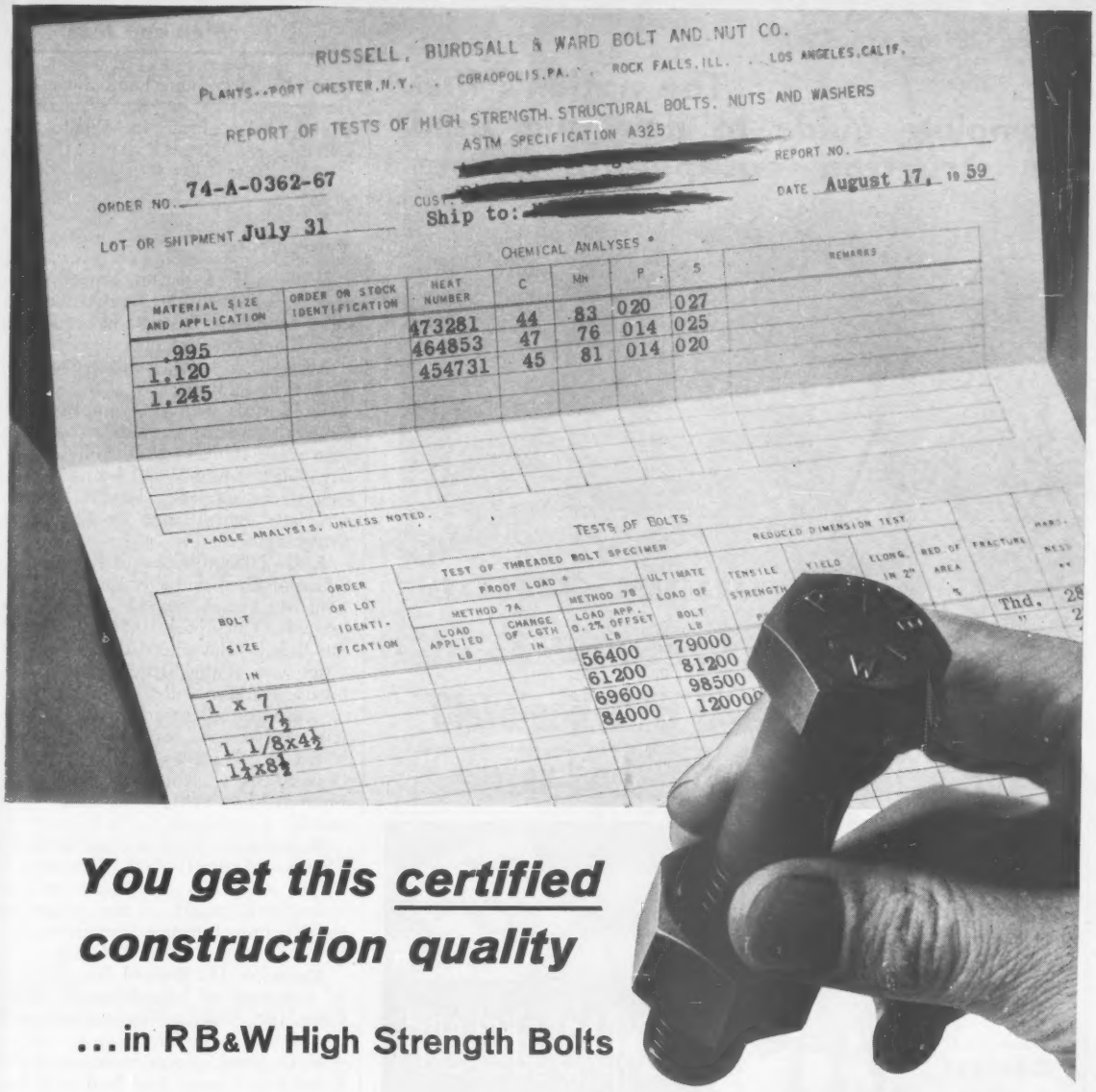
Cassatt D. Griffin, assistant chief deputy engineer for Los Angeles County, has been elected president of the International Conference of Building Officials. He has been serving as first vice president for the past year. A graduate of the University of South California, Mr. Griffin has been a building official of Los Angeles County for 25 years.

L. Jack Hallman has been named South Carolina representative for the Carolina's branch of the Associated General Contractors.

George E. Pesa, president of Felix Pesa & Sons Co., Youngstown, Ohio, has been elected president of the Ohio Council of Associated General Contractors. He also heads the Mahoning-Shenango Valley chapter.

John C. Fallon, engineer and building contractor of Alto, Mo., has been named executive director of the newly formed Council of Contractor Associations for the East Side Industrial District in St. Louis. The council has been established to provide statistical and background information concerning construction labor in the district and also works to improve labor relations. Mr. Fallon is a former partner in the J. J. Wuellner & Son Co.

Frank T. Lynch has been elected to a second term as chairman of the Delaware Board of Registration for Profes-



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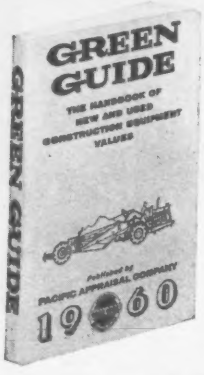

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sional Engineers and Land Surveyors. He is a partner in Van Demark & Lynch, civil engineers in Wilmington, Del.

Careers

Retirements

William D. Anderson, general manager of Campbell and Kenton County Ohio Sanitation District, has resigned. He has held the post since 1954.

Allen S. Gentles, general manager of Dominion Bridge Co. Ltd., retired after 52 years with the company. He joined the company in 1907 as a draftsman while studying at McGill University. After World War 1 he started his own steel contracting business, which was later bought out by Dominion Bridge in 1927.

A. C. Tilley, director of Region VI, Office of Civil and Defense Mobilization, has retired after 42 years of service. Mr. Tilley organized civil defense activities in Hawaii, Alaska and many states west of the Missouri River. He became director of Region VI in 1951. A civil engineering graduate from Rensselaer Polytechnic Institute, Mr. Tilley served for 22 years with the Nebraska Department of Roads and Irrigation. From 1935 to 1941 he was state engineer.

Belle Courtney, an engineer with the Michigan State Highway Department for 31 years, has retired. She was responsible for much of the design on the 147-mile Interstate expressway between Detroit and Grand Rapids.

Randolph H. Barnard has resigned as president of Johns-Manville Fiber Glass, Inc., Toledo. He continues as a consultant for the firm.

E. O. Jewel, general manager of Toledo-Lucas County Port Authority, has retired. He is also former port director in New Orleans and Norfolk.

Burt L. Knowles has retired after 25 years with the Associated General Contractors. He continues to work as a consultant for the Association, handling special assignments. Before joining the Association he was president of the E. D. Ward Co., building and heavy construction contractors of Worcester, Mass.

John T. Morgan, superintendent of public works at Kernersville, N. C., has resigned to enter private business. Before taking the municipal job, he was engineer for the W. H. Weaver Construction Co., Greensboro, N. C.

John G. Butter has retired as chief engineer of the Iowa Highway Commission, a position he held since 1954. He continues as a consultant with the commission.

Obituaries

California Highway Chief Dies Soon After Promotion

John W. Vickery, 67, a veteran of 42 years with the California Division of Highways, died just two months after he was appointed state highway engineer and chief of the Division of Highways. He had been chief planner of the state's freeway program for 12 years, until Oct. 1, when he was named to succeed George T. McCoy as head of the division (ENR Nov. 12, p. 63).

Mr. Vickery joined the California Division of Highways in 1917, after study at Los Angeles Polytechnic Institute. He was appointed assistant state highway engineer in charge of planning in 1947 when California began its intensive highway modernization program. He was promoted to deputy state highway engineer in 1955.

George W. Lamb, 59, Topeka, consulting structural engineer, since early this year, and before that for four years bridge engineer with Howard, Needles Tammen & Bergendoff. A civil engineering graduate of the University of Kansas, he was with the Kansas State Highway Department from 1929 to 1945, first as a designer and then as chief bridge engineer. Subsequently, he was district engineer at Topeka for the American Institute of Steel Construction for nine years. He was a former national director of the American Society of Civil Engineers.

John Henry Zurn, 34, president of Zurn Industries, Inc., Erie, Pa., in an airline crash. He was director of sales and marketing for the plumbing products and fluid control division of Zurn, manufacturers of plumbing drainage controls and fluid handling devices. He was a graduate of the University of Pennsylvania's Wharton School of Finance.

Edward Necarsulmer, 85, retired architect and designer of many commercial, industrial, institutional and residental structures in New York City. With his design for the front of Franklin Simon & Co. specialty shop, he won the 1922 award of the Fifth Avenue Association. He was also the architect for the Kelley-Springfield Tire Co. plant at Cumberland, Ohio.

R. A. McMillan, 59, dean of the engineering school at Texas Institute of Technology in Dallas. Before joining the Institute's faculty he taught public school for 33 years.

Cleveland 80W lays pipe for 13-mile sewer line—does backfilling, too

G. C. McLeod Co. of Edmonton, Alberta made extensive use of its Cleveland 80W for laying 20" and 8" asbestos pipe on a 69,000-foot sanitary sewer line in Nanaimo, B. C. Even in the extremely wet and heavy mud of the salt water tidelands shown above, construction moved ahead 800—1,300 feet daily. As the line progressed into drier ground, the 80W was further employed in backfilling and cleanup operations.

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- **DOES SIDEBOOM WORK OF ALL KINDS,** unloads, strings, lays pipe, sets valves, hydrants, etc.
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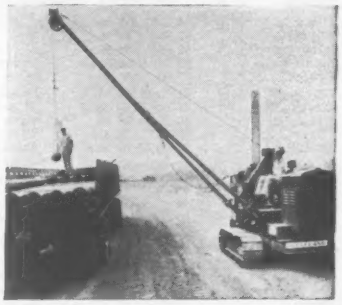
- **TAMPS SPOIL** simultaneously with pull-backfilling, or separately, as required.



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The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere

Labor and Materials Prices

Monthly Market Quotations by ENR Field Reporters

HOURLY WAGE RATES—Base rate + fringe benefits

	Common Labor: Building	Common Labor: Heavy Const	Bricklayers	Carpenters	Struct. Iron Workers	Hoisting Engineers	Plasterers	Electrical Workers	Steamfitters	Truck drivers: 1½ T	Truck drivers: under 4 cy	Truck drivers: over 4 cy
Atlanta	$1.825	$1.825	$3.85	$3.20	$3.45+7½¢	$3.325	$3.315*B*	$3.50+10¢	$3.80+20¢	$1.825	$1.925	$2.175*B*
Baltimore	2.20+7½¢	2.20+7½¢	4.10+10¢	3.30+7½¢*f*	3.90+7½¢	3.35/4.05+10¢*A*	3.80+10½¢	3.75+7½¢	3.74+9½¢	2.15+7½¢	2.15+7½¢	2.25+7½¢
Birmingham	1.85	1.95	3.95	3.15	3.45+10¢*mn*	3.18	3.27	3.65	3.47+10¢*p*	1.90	2.10	2.35
Boston	2.65+10¢	2.55+10¢	3.80+20¢	3.55+10¢	4.02+20¢	3.90+10¢	3.65+45¢	3.90+25¢	3.75+25¢	2.70+8¢	2.70+8¢	2.70+8¢
Chicago	3.02½+7½¢	3.02½+7½¢	4.07½+7½¢	3.75+20¢*o*	4.15+16¢*n*	3.75+5¢	3.95+23¢	4.10	3.95+24¢	2.48+15¢	.....	.....
Cincinnati	2.75	2.65	3.90+10¢	3.72½*D*	3.80+10¢	3.475/3.70*A*	3.725+.04	3.97+39½	3.95+94¢	2.55+62½¢	2.65+61¢	2.75+61¢
Cleveland	3.256	3.165*b*	3.965+10¢*b*	3.99*b*	3.89+10¢*b*	3.99*b*	3.99*a*	4.05*b*	3.79+20¢*b*	2.82+15¢*m*	2.82+15¢*m*	2.82+15¢*m*
Dallas	1.80	1.80	3.95	3.35*b*	3.425+7½¢	3.45*B*	3.75+13¢	3.50+7½¢	3.575+8½¢	1.80/2.625	1.80/2.625	1.80/2.625
Denver	2.25	2.25	3.90	3.50	3.41+7½¢	3.15	3.625+12¢	3.75+14¢	3.80+10¢	2.40*B*	2.65*B*	2.80*B*
Detroit	2.80+42¢	2.80+42¢	3.90+30¢	3.55+42¢	3.90+22½¢	3.55+36¢	3.66+34¢	3.90+44	3.835+17½¢	2.95	2.95	2.95
Kansas City	2.455	2.505	3.95	3.50	3.55	3.445	3.75	3.75+355¢*E*	3.70+9½¢	2.43	2.43	2.505
Los Angeles	2.88+10¢	2.88+10¢	4.00+25¢	3.60+20¢	4.07½+23½¢	3.61+15¢	4.125+42½¢	4.40+44	4.10+52¢	3.15½+10¢	3.15½+10¢	3.345+10¢
Minneapolis	2.70	2.70	3.875	3.45	3.62	3.45	3.50+33¢	3.55+39¢	3.62+20¢	2.70	2.70*d*	2.85
New Orleans	1.85*e*	1.85*e*	3.675+7½¢*d*	3.20*d*	3.50+7½¢*d*	3.325+7½¢*d*	3.19+5¢*jk*	3.675+7½¢	3.60+15¢*dl*	2.675+7½¢*d*	2.675+7½¢*d*	2.675+7½¢*d*
New York	3.30+26¢*c*	3.30+26¢*c*	4.80+44¢	4.40+35¢*k*	4.60+47¢*j*	4.65+37¢	4.50+62¢	3.90+1.272	4.50+54¢	2.35+22½¢	3.40+28½¢	3.40+28½¢
Philadelphia*R**	2.50	2.40+10¢	4.10+17¢	3.785	4.30+23¢	3.935/4.215+10¢*A*	4.15+15¢	4.37½+16¢	4.10+31½¢	2.45+15	2.45+15½¢	2.45+15
Pittsburgh	2.575+20¢	2.425+20¢	4.30+20¢	3.775+20¢	4.15+20¢	3.73+20¢	3.95+20¢	4.35+32½¢	4.00+20¢	2.50+20¢	2.635+20¢	2.735+20¢
St. Louis	2.775+10¢	2.775+10¢	4.05+32½¢	3.725+10¢*c*	3.75+7½¢	3.825	3.90+07½¢	4.11+31¢	4.07½+22½¢	2.80+12½¢	2.80+12½¢	2.80+12½¢
San Francisco	2.865+10¢	2.865+10¢	4.25+42½¢	3.55+30½¢	4.075+22½¢	3.405+10¢	3.79+63¢	4.22+29¢	4.14+54¢	2.81+20¢	2.75+20	2.80+20¢
Seattle	2.85+10¢	2.85+10¢	4.15+10¢	3.32+10¢	3.59+10¢	3.59+20¢	3.57+30¢	3.80+26¢	3.81+24¢	3.15+20¢	3.15+20¢	3.35+20¢
Montreal	1.65+4¢*q*	1.65+4¢*q*	2.45+5¢*q*	2.25+5¢*q*	2.45+5¢	2.35+5¢	2.45+5¢	2.35+5¢	2.47+5¢*s*	1.65+4¢	1.65+4¢	1.65+4¢
Toronto	1.80+7¢	1.80+7¢	3.00+12¢	2.80+12¢	2.90+12¢	3.05+12¢	3.00+20¢	3.30+13¢	3.20+13¢	1.90+14½¢	1.90+14½¢	1.90+14½¢

	Tractor Operators—Incl. bulldozers: 34-69 hp	70-100 hp	100 & over	Tractor scraper 15-18 cy	Power cranes & shovels: ½ cy	¾ cy	Motor grader oper	Air comp oper	Air tool oper
Atlanta	$2.925	$3.00	$3.00	$2.85	$3.375	$3.525	$2.85	$2.775	$1.925
Baltimore	3.65+10¢	3.65+10¢	3.65+10¢	3.65+10¢	4.05+10¢	4.05+10¢	3.65+10¢	3.25+10¢	2.25+7½¢
Birmingham	3.18	3.18	3.18	3.18	3.18	3.18	3.18	2.77	2.05
Boston	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.52½+20¢	3.90+20¢	3.90+20¢	3.52½+20¢	3.45+20¢	2.80+10¢
Chicago	3.50+5¢	3.65+5¢	3.30+5¢	3.30+5¢	4.10+5¢	4.10+5¢	3.50+5¢	3.40+5¢	3.70+5¢
Cincinnati	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.475+10¢	3.70+10¢	3.70+10¢	3.70+10¢	3.70+10¢
Cleveland	3.74*b*	3.74*b*	3.74*b*	3.74*b*	3.99*b*	3.99*b*	3.74*b*	3.615*b*	3.615*b*
Dallas	1.80/2.625	1.80/2.625	1.80/2.625	1.80/2.625	3.175*kB*	3.175*kB*	1.80/2.625	1.95	1.95
Denver	2.40	3.00	3.00	3.00	3.15	3.15	3.00	3.00	2.53
Detroit	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.55+36¢	3.275+15¢	2.93+34¢
Kansas City	2.75	3.20	3.20	3.20	3.445	3.445	3.20	3.20	2.55
Los Angeles	3.91+15¢	3.91+15¢	3.91+15¢	4.01+15¢	4.01+15¢	4.01+15¢	4.01+15¢	3.13+15¢	3.09+10¢
Minneapolis	3.08	3.30	.....	3.30	3.52	3.78	3.08	2.97	2.85
New Orleans	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	3.325+7½¢*d*	2.675+7½¢*d*	1.95*e*
New York	4.025+32¢	4.025+32¢	4.025+32¢	4.15+33¢	4.90+39¢	4.90+39¢*k*	4.15+33¢	4.15+33¢	4.15+21¢
Philadelphia	3.52+10	3.665+10	3.665+10	3.79+10	4.215+10	4.215+10	3.765+10	3.41+10	2.35
Pittsburgh	3.565+15¢	3.565+15¢	3.565+15¢	3.565+15¢	3.765+15¢	3.765+15¢	3.765+15¢	3.275+15¢	2.435+20¢
St. Louis	3.825	3.825	3.825	3.825	3.825	3.825	3.825	3.275	3.275
San Francisco	3.70+20¢	3.70+20¢	3.70+20¢	3.70+20¢	3.85+20¢	3.85+20¢	3.75+20¢	3.10+20¢	2.955+20¢
Seattle	3.56+20¢	3.56+20¢	3.56+20¢	3.56+20¢	3.93+20¢	3.93+20¢	3.65+20¢	3.29+20¢	3.05+10¢
Montreal	1.85+4¢	2.08+5¢	2.08+5¢	2.08+5¢	2.35+5¢	2.35+5¢	2.08+5¢	1.95+4¢	1.95+4¢
Toronto	2.30+10¢	2.40+10¢	2.40+10¢	2.40+10¢	2.90+12¢	3.05+12¢	2.70+11¢	2.40+10¢	2.40+10¢

ENR Skilled Average (Bricklayers, Carpenters, Iron Workers): $3.897. ENR Common Average $2.61

Description of fringe benefits last appeared Feb. 26; will next appear in Sept. 17 Cost Issue. *A 1-2 drum. *B revised eff. July 1 *E revised eff. Oct. 1

DEFERRED WAGE INCREASES UNDER PRESENT CONTRACTS: 1960: a May 1; 10¢ b May 1; 12¢ k May 1; 8¢ l May 1; 10¢ m Jan. 1; 15¢ n Jul. 1; 5¢ o Jun. 30; 22½¢ s Apr. 1; 15¢ **1959:** c Dec. 1; 10¢ d Nov. 1; 10¢ e Nov. 1; 5¢.

BUILDING BOARD & LATH AND INSULATION—DELIVERED TRUCKLOAD LOTS

	Gypsum Plaster Board tapered edge per Msq ft ½"	⅝"	Gypsum Board Lath plain or perf per Msq ft ⅜" x 16" x 48"	Gypsum Sheathing tongue & groove per Msq ft ½" x 2' x 8'	Fiber Board Sheathing asph impreg & coat per Msq ft ½" sq ed	½" T&G	Fiber Board Insulation sq edge, paint per Msq ft ½"	Mineral Wool Insulation loose, per 40-lb bag a	3" batts per M sf	Glass Fiber Insulation loose, per 40-lb bag a	3" batts per M sf	Aluminum Foil 60# Kraft 1 side foil per roll of 250 s. f.	Expansible Blanket 2 layers foil per Msq ft
Atlanta	$65.00*F*	$55.00*F*	$42.50*F*	$68.00*F*	$72.00*F*	$127.00*F*	$75.00*F*	1.59*z*	$70.00*F*	$2.00	$80.00*F*	$4.77*qi*	
Baltimore	52.80	46.10	34.50	55.35	65.00	108.50	69.00	1.30*F*	66.50*F*	1.80*F*	45.00*F*	4.00*F*	$33.50*F*
Birmingham	68.90*H*	57.00*H*	47.77*H*	75.00*H*	67.50*H*	140.50*H*	83.50*H*	1.40	70.00	1.60	75.00	3.77*gG*	
Boston	60.00*mH*	50.00*mH*	36.00*mH*	60.00*mH*	65.00*H*	120.00*H*	79.00*kmH*	1.40*kH*	75.00*H*	.....	75.00*H*	5.30*zHS*	53.50*qH*
Chicago	67.00	54.00	45.00	62.00	87.00	123.00	87.00	1.85	80.00	.....	63/65*i*	5.25*j*	.....
Cincinnati	52.50*wH*	42.85*wH*	33.05*wH*	51.16*wH*	77.00*wH*	125.00*wH*	72.50*wH*	1.45*wH*	62.50*wH*	1.45*wH*	62.50*wH*	3.28*mJ*	50.00*sJ*
Cleveland	62.00*CF*	56.50*CF*	41.50*CF*	65.00*CF*	80.00*CF*	129.00*CF*	80.00*CF*	1.35/1.50*H*	72.00*H*	.....	63.75	15.00*oJ*	55.00*J*
Dallas	56.25	46.85	42.50	56.25	68.75	118.00	68.75	2.00	65.60	1.45	70.67	5.00*gAG*	45.00
Denver	66.50*H*	58.50*H*	45.00*H*	68.75*H*	84.00*H*	130.00*H*	84.00	1.50*b*	65.00*ub*	1.75*b*	65.00*a*	5.25	48.65
Detroit	66.00*K*	55.00*K*	43.00*K*	65.00*K*	62.50*DK*	103.50*DK*	62.50*DK*	1.30*b*	50.00	1.95*b*	88.00	.....	.....
Kansas City	72.00*H*	62.00*H*	45.00*H*	.....	75.00*H*	122.00*H*	80.00*H*	1.40*H*	75.00*H*	1.80*H*	75.00*H*	3.60*d*	53.98
Los Angeles	66.00*F*	60.50*F*	0.33*xF*	64.50*F*	75.00*F*	125.00*F*	80.00*F*	76.00*BeF*	83.00*F*	1.35*a*	64.00	4.40*g*	7.45*Y*
Minneapolis	75.00*F*	65.00*F*	0.41*xL*	75.00*F*	95.00*F*	130.00*F*	78.00*F*	2.25*yF*	80.00*F*	2.10*F*	80.00*F*	4.25*F*	.....
Montreal	58.00*M*	49.30*M*	37/41.50*M*	53.00*M*	64.75*M*	.....	58.50*M*	1.50*M*	66.00*M*	1.50*M*	66.00*M*	9.00*qM*	56.00*M*
New Orleans	57.00*H*	52.00*H*	45.00*H*	60.00*H*	67.00*H*	140.00*H*	80.00*H*	2.00*L*	70.00*	.....	.....	.....	52.12*U*
New York	65.00*H*	55.00*H*	42.50*H*	65.50*H*	78.00	124.00	78.00	1.55*b*	68.50*k*	.....	.....	4.38*sH*	40.00*cH*
Philadelphia	52.50	46.00	36.00	52.00	70.00	105.00	70.00	1.05	50.00	1.40	50.00	5.25	60.00
Pittsburgh	74.00*K*	65.00*K*	40.00*K*	63.00*K*	63.00*K*	103.35*K*	58.10*K*	1.10*sK*	55.00*K*	1.10*sK*	55.00*K*	4.20*iqK*	38.50*K*
St. Louis	65.00*HO*	55.00*HO*	40.00*HO*	70.00*HO*	76.00*HO*	120.00*HO*	80.00*HO*	1.35*yHO*	85.00*HO*	2.00*PHO*	74.00*HO*	4.50*qHO*	.....
San Francisco	60.00*F*	49.00*F*	0.36*xF*	61.00*F*	68.00*F*	109.00*F*	67.00*F*	1.75*F*	66.50*F*	1.75*F*	66.50*F*	5.10	60.00*F*
Seattle	66.80*K*	57.65*K*	51.05*K*	65.00*K*	74.50*K*	125.00*K*	73.50*K*	1.15*tK*	58.00*K*	1.90*vpK*	51.00*vlKk*	4.25*K*	46.50*EK*
Toronto	58.00	50.00	38.00*L*	64.80	61.50*F*	.....	64.00*F*	1.65	65.50	.....	65.50	14.75*o*	46.00

*F.o.b. warehouse. *a Semi thick. *b 30# bag. *c 3 layers of foil: $54.50. *d 40# kraft paper, 5 Msf, 100/500 rolls. *e 20# sq ft bag, 4" thick. *f Full trailer loads. *g 80# kraft paper backing 400 rolls or over. *h LCL. *i 40#. *j 80#. *k 2-in. *l 2". *m 8 to 10 ton quantities. *n Distributor's siding. *o Per Msf roll. *p 32# bag. *q 500 sf. *s 35# bag. *t 26# bag *u Flame proof $75. *v 5000 sf quantity. *w F.o.b. city. *x Sq. yd. *y 30# bag. *z Spun rock wool. *A 650 sf. *B ton. *C F.o.b. plant, freight allowed. *D CL. *E 10 Msf. *F less 2% disc, 10th. *G ½ of 1%, 10 days. *H 2% disc, 10 days. *I 1% disc, 10 days. *K less 2% for cash. *L 5% disc, 10th mo. *M fed. tax incl. *N 1% disc, 10 days. *O add 2% sales tax. *P 50 lb. bags, *Q add 4% sales tax. *R revised. *S 45 lb. *T less 2%, 30 days. *U lots of 2606 sq. ft. *V 250 sf roll. * Philadelphia prices revised watch for analysis.

MEXICO CITY WAGES & PRICES

WAGES, av per week, 8 hr day (pesos)		Sept '59	Oct. '59
Common labor,	building (peons)	87.50	87.50
	heavy const (peons)	87.50	87.50
Skilled labor,	carpenters 1 cl	175.00	175.00
	bricklayers 1 cl	210.00	210.00
	struct. ironworkers	280.00	280.00

MATERIALS PRICES, F.o.b. City (pesos)	Sept '59	Oct. '59
Struct. steel shapes, fob Monterey		
I-beams, 3 x 3 x 4" per metric ton	2400.00	2400.00
Reinf. steel, corrugated rods, per ton		
⅜"–½" x 11 meters	1900.00	1900.00
¾"–1" x 11 meters	1900.00	1900.00

	Sept '59	Oct. '59
Gravel, truckload, per cu meter		
Blue gravel	25.00	30.00
Cement, std. port. (Tolteca)	2.40	2.40
Lumber, 2"x4" 1st class pine..per M sq. ft.	2200.00	2100.00
2"x4" 2nd class pine..per M sq. ft.	1900.00	1800.00

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.* truckload del.* per block		CONCRETE Ready Mixed 1:2:4 del. per cy
	Paper	Bulk	Mortar	Gravel, 1½ In.	Gravel, ¾ In.	Sand	1½ In.	¾ In.	1½ In.	¾ In.	Sand grav.	Lt. wgt. agg.	50 cy & over
Atlanta	$4.38a‡	$3.88a‡	$3.68a‡	$3.10a‡	$3.10a‡	$1.85‡a	$2.18a	$2.33a	$1.65r	$1.75r	$0.175o	$0.21o	$13.75g
Baltimore	4.42a	3.91a	3.46a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	.18a	.18a	13.50ou
Birmingham	4.23c	3.30c‡	....	2.53ns	2.53ns	2.13ns	2.75s	2.75s	1.65d	1.75d	.18	.18	14.65g
Boston	5.83ip	4.52ap	4.90imp	3.00qas	3.00qas	3.00qas	1.75qas	1.85qas	....	....	.23o	275ao	15.00g
Chicago	4.40ag	4.02ag	4.15g	3.78‡e	3.78‡be	4.13‡be	3.95‡be	3.95‡be	2.25‡s	2.25‡s	.26‡e	26‡be	14.00e
Cincinnati	4.68c	4.16c	4.18c	2.29‡cu	2.34‡cu	2.44‡cu	2.51‡cu	2.74‡cu	1.80u	1.80u	.20o	25ao	14.00qr
Cleveland	1.30‡	....	3.89‡ae	2.25ae	2.10ae	1.75ae	2.80fy	2.80fy	2.20‡fR	2.20‡fR	....	23f	16.50u
Dallas	3 65a	3.25a	3.53a	2.65‡a	2.75‡a	1.90‡	2.43	2.63	....	....	....	27	12.50z
Denver	4.79a	4.29a	4.79	1.95‡	2 15‡	1.42‡b	....	3.00‡z	....	....	.25	27ao	11.90
Detroit	4.35a	3.89aqq	3.92a	4.50‡abm	4.50‡abm	4.25‡abm	3.75‡abm	3.75‡abm	2.47aqes	2.47aqes	.23u	25‡au	15.00eas
Kansas City	4.52a	3.92a	4.30a	....	....	1.85‡a	2.00‡a	2.00‡a	....	....	.22a	26c	14.00
Los Angeles‡‡	5.12eh	4.68eh	5.60c	2.56‡at	2.76‡at	2.41‡at	2.46‡a t	....	....	....	19f	305	12.46hlz
Minneapolis	4.66a	4.15a	4.25a	2.70‡ae	2.70‡ae	1.60‡ae	3.95‡ae	3.95‡ae	....	....	20q	....	14.30f
Montreal	3.36‡de†	3.11‡d†	3.72‡de†	1.90‡a†	2.15‡a‡	2.40‡a	1.90‡†	2.15‡†	2.00†	2.00†	20†	28‡†	10 80eh†
New Orleans	4.06b	3.65b	3.85b	2.61b	2.61b	2.16b†	....	....	1.65d	1.75d	.29r	.29	14.00o
New York	4.58aR	4.18aR	3.65aR		3.20bk	2.40bkw	2.85blbb	2.85blbb	....	....	.265nwo	.32bwo	17.60ay
Philadelphia	4.39‡ae	3.99‡ae	3.51‡e	1.95‡a	1.95‡a	1.55‡a	2.00‡a	2.30‡a	2.25‡a	2.25‡a	....	.32‡s	13 90z
Pittsburgh	5.65bjk	4.62bj	5.00bj‡	2.85‡aqr	2.85‡aqr	3.08‡aqr	2.00‡aqr	2.00‡aqr	2.10w	2.10w	.26rz	26‡z	15.80o
St. Louis‡‡	4.54a	4.04a	4.24a	3.40‡as	3.40‡as	2.40/3.40‡as	1.75‡s	1.75‡s	....	....	.255‡o	.315‡eo	13.65/14.10g
San Francisco	4.34c	3.79c	4.78c	2.02	2.02	2.12	2.17	2.17	....	....	.24	33‡f	13.00ew
Seattle	4.47‡a	3.75ag	4.65a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm	....	....	.324s	.45cs	13.90f
Toronto	5.00r	4.00Rt	5.00h	2.40	2.40	2.05	2.40	2.40	2.40	2.40	.28	.275cs	13.75g

‡ Delivered. * Prices incl. dealers discount except as noted. # Add 4% sales tax ## Add 2% intrastate sales tax. R Revised. † Plus 6% Mun & Prov tax.

CEMENT: °a Less 10¢ disc. 15 days. °b Less 2% disc. 15 days. °c Less 10¢ disc. 10 days. °d 10¢ disc. 20 days. °e Truckload lots. °f Fob mill, add $14.58 to $21.31 per car switching charges. °g fob mill + freight. °h LCL. °i Less 2% disc. 10 days. °j Truck lots, fob yard. °k 100 bag lots °l over 150 sacks. °m Sold in bags only. °n Less 5% disc. 30 days. °o Plus 50¢ for Sat. del. °p 5-8 ton truckload. °q F.o.b. mill °s In bags & bbl. Only °t min. 7 tons

SAND, GRAVEL, STONE & SLAG: °a Truck lots. °b Per cu. yd. °c 5 tons up. °d Less 5¢ disc. 10 days. °e Less 20% disc. 10th. °f Less 2% disc. 15th. °g Less 5% for cash. °h Less than 5 tons. °j F.o.b. quarry. °k Barge lots asd. °l F.o.b. scow Hudson river. °m Less 2% for cash. °n F.o.b. cars. °q F.o.b. yard. °r less 5% disc. 15th. °s Less 2% disc. 10 days. °t Less 10¢ disc. 10 days. °u Less 5¢ disc. 10 days. °v Less 2% disc. 15 days. °w Less 10¢ disc. 15 days. °x Incl. 35¢ switch. charge. °y F.o.b. dock. °z 5-8 tons. °aa Less 5% disc. 15 days. °bb Less 2% 25th of month

CONCRETE BLOCK: °a Cinder. °b Waylite. °c Haydite. °d Celocrete, °e 5¼ x 8 x 12 in. °f 8 x 4 x 16. °g F.o.b. truck at job. °l F.o.b. plant San Rafael. °m F.o.b. yard. °n 8 x 8 x 16. °o Less 2% disc. 10 days. °p Less 2% disc. 10th. °q Less 5% disc. 10th. °r Less 2% disc. 15 days. °s Less 2% disc. cash. °t Siporex, 7 x 8 x 16. °u Less 5% disc. 10 days. °v Less 12% disc. 15th. °w Eff. 1/1/60 °x Revised Oct. 1.

READY MIXED CONCRETE: °a 6 cu yd or over del. Man. °b 25 cu yds or more. °c 10–100 cy. °d 1–3 mi. zone add 15¢ for ea. add'l 1-mi. zone. °e 3,000 lb comp. °f 2,500 lb. comp., less 5% disc. 30 days. °g Less 25¢ disc. 15 days. °h Less 50¢ for cash. °l 5% off for cash. °j 2% off for cash. °k Federal tax included. Add 6% mun. & prov. tax. °l 1:2½:3½ base price. °m F.o.b. yard. °n Plus escalator clause. °o Less 2% disc. 15 days. °p Less 50¢ disc. 15 days. °q Less 2% disc. 10 days. Add 50¢ per zone. °r 2000 wgt. °s Less 5% disc. 10 days. °t Incl. 50¢ heating. °u Less 2% disc. 15th. °v Sat. del.+50c. °w 10-100 cy. °x Del in zone 20-B. °y less 25¢. 10 days. °z less 1% in 30 days. °aa 6 bag mix

CURRENT MAXIMUM PRICES AT CEMENT MILLS: Subject to 10¢ discount, 15 days. For paper bags add 40¢ per bbl., not refundable *Prices guaranteed through December 31, 1959*

	Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45	Buffington, Ind	$3.40	Steelton, Minn	$3.45	Muskegon, Mich	$3.45
Clinchfield, Ga	3.45	Independence, Kan	3.25	Leeds, Ala	3.30	Saginaw, Mich	3.45
Kingsport, Tenn	3.45	Hannibal, Mo	3.35	Duluth, Minn	3.45	Wyandotte, Mich	3.45
West Des Moines, Iowa	3.50	Northampton, Pa	3.50	Hudson, N. Y	3.50	Buffalo, N. Y	3.55
Nazareth, Pa	3.50	Universal, Pa	3.60	Alpena, Mich	3.35	Oswego, N. Y	3.60
Bath, Pa	3.50	Waco, Tex. (+ 10c tax)	3.35	Detroit, Mich	3.45	Cleveland, O	3.50
Lesley, Pa	3.50	Giant, S. C	3.45	Howes Cave, N. Y	3.50	Alsen, N. Y	3.50
						Toledo, O	3.45
						Milwaukee, Wis	3.50
						Green Bay, Wis	3.50
						Ironton, O	3.45
						Montreal City	2.55
						W. Winfield, Pa	3.60
						Security, Md	3.50

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS—FLUXES Per gal., 80–300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 In.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta	e	e	e	$28.70PS	$45.00PS	$0.2740PS	$0.235S	$0.1308uS	$0.245uS	$0.1258S	$0.1325S	$0.245
Baltimore	e	e	e	21.00i		09i	0.18i	09iwE	.18iwE	.095	.10i	0.19i
Birmingham	.....	66.00i	•....	25.12	25.69O	.1069	0.1093O	.1162w	.1188Ow	.1006O	.1069	0.1093O
Boston	.....	.....	.....	22.00apS	46.00apS	22.00asS	46.00asS	.105awF	.22awF	.14aOR	.15OR	.....
Chicago	150.00‡a	95.00‡ab	3.95/4.00‡aj	22.00b	32.00b	20.40bv	30.40bv	.10bwH	.18bwH	.08b	.....	.....
Cincinnati	.....	.....	.....	26.00SU	.....	26.00ff	.....	.1165wSU	.....	.100	1265	.....
Cleveland	.....	89.50‡d	6.30	26.00tA	.....	26.00twA	.....	.1165twAF	.....	.....	.1265tA	.21A
Dallas	e	40/80p	e	26.90	46.35	.1138	.1983	30.50	52.45	.1100	.1138	.1983
Denver	.....	62.00a	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Detroit	.....	116.00	.....	30.90R	.....	31.00wR	.....	.1342wIR	.....	1000	.....	28
Kansas City	e	e	e	13.00c	.....	18.00cs	.....	.0825cwJ	.....	.079c	0.125c	.....
Los Angeles‡	e	e	e	21.50dmz	.....	21.50dvz	.....	23.00d Kz	.....	22.00dwaa	23.90‡Xs	26.30‡Xs
Minneapolis	.... e	.....	3.73A	25.00	.....	26.00r	.....	.115w		0.105	.1375bb	..
Montreal	e	e	e	30.50n	43.60n	.167n	.211n	17.80nwE	22.20nwE	.155n	242n	27nX
New Orleans	e	e	e	20.00e	.....	20.00ev	.....	.095ew	.....	085eB	095eBL	1905eB
New York	.....	.....	3.70f	23.99mO	45.94mO	23.99wtO	45.94wtO	10.61wF	20.01wF	.....	10.68w	20.11w
Philadelphia	.....	.....	.....	18/21U	.....	18/21U	.....	0.085/.10FU	.....	0.085/.10U	.....	.....
Pittsburgh	60.00k	95.00n	6.35n	31.20is		31.20isv		.1403‡S	.1413S	.141‡S	.1403i	.....
St. Louis‡‡	.....	.....	.....	19.74f	21.19	.1825f	.1825	.0890f	.0915fw	0.165f	.1825O	.30R
San Francisco	.....	70.00	.....	22.50gdd	41.00gdd	22.50gkdd	41.00gkdd	22.50gNdd	46.50gNdd	23.25gwWdd	23.50gwXdd	2023gXdd
Seattle	.....	.....	.....	24.00z	47.00h	33.00zcc	38.50	25.50KE	.....	28.75lwY	25.80hwX	49 80hwX
Toronto	.....	135.50/‡	4.50/	41.10	60.66ee	0.2075	0.2773ee	0.222w	0.2704wee	0.233	0.2182ee	.273Zee

‡ Delivered. # Add 4% sales tax. ## Add 2% intrastate sales tax. R Revised.

PAVING BRICK & BLOCK: °a Less 2% disc. 10th. °b 3 x 3¾ x 8. °c 2¼ x 8¼ x 4. °d Truckload lots. °e Not used. °f 2" interior 6 lb tr. °g Less $1/Mdisc. 15th. °h 2" tr, 8 lb. °i 3 x 3½ x 8½. °j 2½", 6 lb. tr. °k Used. °l Redshale. °m Pine: oak $6.57. °n Truck del. °o Less $1/M disc. 15 days. °p Used: >40: new: $80.

ASPHALTS: °a F.o.b. refinery, Everett, Mass. °b F.o.b. refinery, Lockport, Ill. °c F.o.b. Sugar Creek, Mo. °d F.o.b. refinery, El Segundo. °e F.o.b. Baton Rouge. °f F.o.b. Hartford, Ill. °g F.o.b. refinery, Richmond, Calif. °h F.o.b. Martinez. °i F.o.b. refinery, Baltimore. °j F.o.b. refinery, Inglewood, Calif. °k 50–110 'penetr. °l Less than 100 penetr. °m 40/300 penetr. °n F.o.b. refinery, Montreal. Fed. tax included: add 6% for mun. & prov. °o Drums not avail. Shipped in steel bbl. °p 60/70 penetr. °r In customer's drums. °s Shipped in drums, per drum. °t 150/300 penetr. °u Per 100 gal. °v Per ton. °w Per gal. °x Also tank trucks °y F.o.b. Oakland. °z F.o.b. Edmonds. °A F.o.b. refinery, Cleveland. °B F.o.b. Destrehan, La. °E RC. °F Also RC. °G Also MS °H RC 0-5 incl. °I MC 4. °J MC, RC $0.095. °K MC 3, 4, & 5. °L MS. °M MC 1-5, RC 1-5, $0.0918. °N MC 3. °O Truck-load. °P F.o.b. refinery, Atlanta. °Q F.o.b. Eldorado, Ark. °R Delivered within 50 mi. °S Less 2% disc. 10 days, net 30. °T Less 1% disc. 10 days. °U F.o.b. refinery. °V Less 2% disc. 15 days. °W SC 2. °X RS 1. °Y SC 1. °Z Incl. 10% Sales Tax. °aa SC 3, 4, & 5. °bb RS 3. °cc In used drums. °dd Less disc of $1 ton. ee 45 Imp. gal. drums °ff 60-150 penetration

See following ENR issues for OTHER PRICES:

- **Wood Products, Glass, Explosives, Chemicals:** Last, Dec. 24; Next, Jan. 21.
- **Clay Products, Lime, Plaster, Paint, Roofing:** Last, Dec. 17; Next, Jan. 14.
- **Iron & Steel Products, Pipe:** Last, Dec. 24; Next, Jan. 28.

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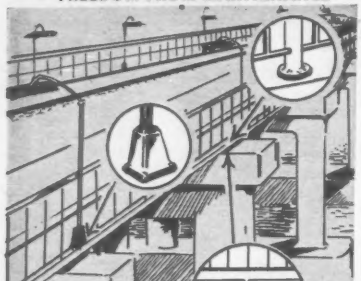

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Construction Reports

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, MARIE MORAVSIK, ELAINE CHOMYAK, ELIZABETH WERRA, ELEANOR QUERET, Reports, J. H. WEBBER, E. R. HUBER, Statistics.

MIDDLE ATLANTIC

BUILDINGS—SLC

▲ **N. J., Princeton**—LABORATORIES, etc.—American Cyanamid Corp., 30 Rockefeller Plaza, New York, N. Y., soon lets contract 2 laboratories, cafeteria, Quaker Bridge Rd., and Rte. 1, West Windsor Twp., $4,000,000-$5,000,000. Voorhees, Walker, Smith, Smith & Haines, 101 Park Ave., New York, N. Y., archts.-engrs.

HEAVY CONSTRUCTION—LB & CA

▲ **Constr. Aggregates Corp.,** 1 E. 42 St., New York 17, N. Y., LB $5,000,000, (7 bidders), fill for Elizabeth-Port Auth. piers, Contr. EP-110.002, ELIZABETH, N. J. Port of New York Auth., 111 Eighth Ave., New York 11, N. Y. Bids Dec. 22. CD 12/3.

† **Merando, Inc.,** 4098 Minnesota Ave. N.E., Wash., D. C., CA $622,140, two 40-man officers quarters, John Tower's Field, ENG-49-080-60-4(4), ANDREWS AIR FORCE BASE, MD. U. S. Eng., First and Douglas Sts. N.W., Wash. 25, D. C. Bids Nov. 24. CD 11/30, under LB.

Roy Ryan Sons Co., Inc., 5416 Boonville Highway, Evansville, Ind., LB $886,642, (6 bidders), Michigan Ave. storm drains between Bunker Hill Rd. and Perry St. N.E., WASH., D. C. D. C. Govt., Dpt. Sanitary Engineering, 499 Pa. Ave. N.W., Wash., D. C. Bids Dec. 22. CD 12/14.

BUILDINGS—LB & CA

Green Tree Manor Homes, c/o John J. Braglia, 169 Old Country Rd., Hicksville, N. Y., Owner Builds, $750,000, 50 HOUSES, 16th St. west of Broadway, HICKSVILLE, N. Y

SOUTH

BUILDINGS—BA

▲ **Va., Richmond**—TREATMENT CENTER—BA 1/13—Dpt. Mental Hygiene & Hospital, State Office Bldg., Va., treatment center for children. $1,000,000.

▲† **W. Va., Martinsburg**—POST OFFICE and COURT-HOUSE—BA 1/26—General Services Admin., Regional Office Bldg., Room 7122, 7th and D Sts. S.W., Wash., D. C., 4 story, bsmnt., penthouse, concrete fdns., concrete frame post office and courthouse, appr. No. 47x1147, Proj. No. 46906, Contr. No. GS-R3-B-7838. Plans deposit $75. CD 1/30.

BUILDINGS—LB & CA

▲ **G. Lloyd Preacher Jr. & Co.,** Bona Allen Bldg., Atlanta, Ga., CA $1,100,000, 95,500 sq. ft. SHOPPING CENTER, MABLETON, GA. H. W. Dunn, Mableton, Ga.

Southern Constr. Co., Box 1307, Augusta, Ga., LB $953,285, (17 bidders), MEDICAL and SURGICAL BLDG., G. Pierce Wood Memorial Hospital Carlstrom Field, ARCADIA, FLA. Bd. Comrs. State Institutions, Tallahassee, Fla. Bids Dec. 17. CD 11/19.

Paul L. Beck Constr. Co., 4914 1 Ave. S., St. Petersburg, Fla., LB $646,927, concrete frame; alt. $580,000 steel frame, North Fort Myers JUNIOR High SCHOOL, Orange Grove Blvd., North Fort Myers, FORT MYERS, FLA. Lee Co. Bd. P. Instruction, Fort Myers, Fla. Bid Dec. 15. CD 12/3.

▲ **Mills & Jones,** 400 23 St. S., St. Petersburg, Fla., CA $1,000,000, 120,000 sq. ft. SHOPPING CENTER, parking for 678 cars, ST. PETERSBURG, FLA. Grand Union Stores, 9 St. and 62 Ave. North (Eastern Shopping Centers, Inc.), 5301 NW 37 Ave., Miami, Fla. Awarded Dec. 18. CD 12/15.

Coastwide Constr. Co., 1005 Beach Dr. N., St. Petersburg, Fla., CA $925,000, 9 story, 44-unit APARTMENT, ST. PETERSBURG, FLA. Brightwaters Towers of Snell Isle, Inc., 1365 Snell Island Blvd., St. Petersburg, Fla. F. W. Schlotterlein, c/o J. H. Romoser, 1333 Snell I Blvd. N. E., St. Petersburg, Fla. CD 12/29.

▲ **Settecasi & Chillura,** 2101 5 Ave., Tampa, Fla., CA $1,036,990, est. $970,000. C. Leon King HIGH SCHOOL, 6815 56 St., TAMPA, FLA. Hillsborough Co. Bd. P. Instruction, County Courthouse, Tampa, Fla., Bids Dec. 1, awarded Dec. 15. CD 12/8, under LB.

A. D. Kendrick, Box 217, Zachary, La., CA $654,500, RECEIVING and REHABILITATION STATION, East Louisiana State Hospital, JACKSON, LA. State Div. of Administration, Baton Rouge, La. CD 12/1, under LB.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $53,000, other public works $88,000, industrial buildings $110,000; other buildings $400,000. Also Foreign projects of $1,000,000 and more in size of interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England
Middle Atlantic
South
Middle West
Mississippi to Rockies
Far West
PROPOSED WORK
Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

MIDDLE WEST

BUILDINGS—SLC

▲ **O., Cleveland**—SCIENCE CENTER—Western Reserve University, 2040 Adelbert Rd., Zone 6, soon lets contract science center, $5,494,770. Small, Smith, Reeb & Draz, 1010 Euclid, Zone 15, archts. CD 11/19/58.

HEAVY CONSTRUCTION—LB & CA

Consolidated Constr. Co., 221 N. LaSalle St., Chicago, 1, Ill., LB $818,690, terminal facilities, two 150 x 750 substructures, Chicago-O'Hare International Airport Park Ridge, CHICAGO, ILL. Dpt. Purchases, City Hall, Chicago 2, Ill. Bids Dec. 16. CD 12/4/58.

▲ **Santucci Constr. Co.,** 5115 Church St., Skokie, Ill., LB $1,998,822, (6 bidders), 144 in. main sewer in S. Pennsylvania Ave. from Puetz Rd. to Drexel Ave., Oak Creek, MILWAUKEE, WIS. Metropolitan Sewerage Comn. of the County of Milwaukee, P. O. Box 2079, Milwaukee, Wis. Bids Dec. 21. CD 11/24.

BUILDINGS—LB & CA

J. C. Breyfogle, 37 N. 3rd St., Columbus, O. CA Est. $650,000, design and construct BOWLING CENTER, OFFICES AND YOUTH HEADQUARTERS FOR CHURCH, CUYAHOGA FALLS, O. Temple Plaza, Inc., c/o Rev. Rex. Hymbard, Calvary Temple, Cuyahoga Falls, O. CD 6/4/57.

† **Maxon Constr. Co.,** 26 Far Hills Ave., Dayton 19, O. LB $749,584, Est. $777,777, (9 bidders), 2 story, 41 x 260 ft. SPECIAL LABORATORY ANALYSIS BLDG. 828 (ATIC) addn., 2nd story addn. to existing bldg. Wright Patterson Air Force Base, ENG-15-029-60-8, DAYTON, O. U. S. Eng., 237 4th Ave., Huntington, W. Va. Bids Dec. 15. CD 11/16.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—LB & CA

▲ **MISSOURI**—State Hy. Dpt., Jefferson City, Bids opened 12/17,

Mo.—J. A. Tobin Constr. Co., 3701 Rainbow Blvd., Kansas City, Kan., LB $1,240,347, (6 bidders), 2-24 ft. concrete pavts. 6.361 mi., Buchanan Co.; LB $1,084,823, (11 bidders), graded earth, culverts, two multi lanes concrete pavt. sep. by median 0.904 mi., Jackson Co.; LB $1,274,991, (5 bidders), 2-24 ft. concrete pavts. 6.82 mi., Buchanan Co.;

Mo.—Missouri Petroleum Products Co. 1620 Woodson Rd., Overland 14, Mo., LB $256,198, (9 bidders), 24 ft. b. conc. resurf. 20.309 mi., New Madrid Co.; LB $185,741, (9 bidders), 24 ft. b. conc. resurf. 9.846 mi., Butler Co. CD 11/18.

Crawford Electric Co., North Platte, Neb., CA $886,920, 161,000 volt transmission line between Omaha, Neb., and Salix, Iowa, NEBRASKA and IOWA, Omaha Public

Power Dist., 803 Electric Bldg., Omaha, Neb. Bids Dec. 1, awarded Dec. 17. CD 12/18, under LB, Nebraska.

Clark Constr. Co., Eldon, Mo., CA $868,689, Sewerage Sys. Imprvs., Part I, lift station force main and primary treatment facilities, ATCHISON, KAN. City, City Hall, Atchison, Kan. Bids Nov. 25. CD 12/21, under LB.

BUILDINGS—LB & CA

▲ Krebs Constr. Co., 3650 W. 11th St., Houston, Tex., LB $2,199,500, Base Bid, 4 ELEMENTARY SCHOOLS, 1 at Ringgold and Lawn and Banjo; 1 at Stancliff and Sims Drive; 1 at Bellfort Drive and Comal St., other at Telephone Rd. and Westover, HOUSTON, TEX. Houston Ind. School Dist., 1300 Capitol, Houston, Tex. Bids Dec. 17. CD 11/18.

FAR WEST

BUILDINGS—BA

▲† Calif., Camp Irwin—HOUSING—BA On Or About 1/28—U. S. Eng., 180 New Montgomery St., San Francisco, Calif., 140 units Capehart Housing, ENG-04-203-60-17B. Extended date. $2,000,000. CD 12/18.

HEAVY CONSTRUCTION—LB & CA

▲ CALIFORNIA—State Div. Hys., 1120 N. St., Sacramento,

Madonna Constr. Co., P.O. Box 910, San Luis Obispo, Calif., CA $1,481,509, grading, surf. 2.3 mi. 4 lane freeway US Hy. 101 through Pismo Beach, incl. traffic separation bridges and interchange facilities, bridges to carry Hinds Ave. traffic over freeway, bridge to take freeway over Wadsworth Ave. and pedestrian undercrossing at Pismo St., San Luis Obispo Co. Bids Dec. 9. CD 12/15.

▲ Macco Constr. Co., 14409 South Paramount Blvd., Paramount, Calif., CA $2,361,267, bulkheads and sanitary sewers, Marine del Rey Small Boat Harbor, Spec. 1979-CSD, LOS ANGELES, CALIF. Bd. Supervs. Los Angeles County, 501 Hall of Records, Los Angeles, Calif. Bids Nov. 12. CD 11/17, under LB.

BUILDINGS—LB & CA

▲ M & K Corp., 519 Calif., San Francisco, Calif., CA $1,148,000, general contract, 6 story LIBRARY addn., San Jose State College, SAN JOSE, CALIF. State Div. Architecture, 1120 N. St., Sacramento, Calif. Bids Dec. 15. CD 12/18, under LB.

Butte Development Co., 1315 S. Broadway Blvd., Santa Maria, Calif., CA $885,111, 65 frame, stucco DWELLINGS, S. Allston Way, W. Enos Ave., S. Thorbury St., SANTA MARIA, CALIF.

Pacific Coast Builders, 1 South Park, San Francisco, Calif., LB $747,000, Base Bid, 50,000 sq. ft. prestressed concrete, Mango Ave. SCHOOL, SUNNYVALE, CALIF. Sunnyvale Elementary School Dist., 275 W. McKinley Ave., Sunnyvale, Calif. Bids Dec. 16. CD 12/3.

PROPOSED PROJECTS

WATER SUPPLY

▲ Va., Norfolk—Dpt. P. Wks. City, City Hall, reservoir and dam, Western Branch of Nansemond River, $3,000,000, CD 10/17/50; water distr. lines extension annexed area, $3,150,000; Moores Bridge Water Filtration Plant Unit, $1,500,000.

SEWERS, WASTE DISPOSAL

▲ Va., Chesterfield—Bd. Supervs. Chesterfield Co. bond election Feb. 2, sewerage system, $11,775,000. R. Stuart Royer & Assocs., 15 W. Cary St., Richmond, consult. engrs.

STREETS AND ROADS

▲ Alta., Calgary—City, City Hall, street constr. 1960, $3,590,245; four-lane Macleod Trail freeway, service roads along Macleod Trail from 58th to 82nd Aves., $573,000.

AIRPORTS

▲† Mont., Glasgow—DEFENSE AREA CLASSIFIED FACILITIES—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., plans by Orr Pickering & Assocs., Fratt Bldg., Billings, classified facilities in Glasgow defense area. Over $1,000,000. Bids next March. CD 9/28.

▲† Mont., Great Falls—DEFENSE AREA CLASSIFIED FACILITIES—U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash., plans by Brinkman & Leon, Strand Bldg., Kalispell, classified facilities in Malmstrom defense area. Over $1,000,000. Bids in February. CD 9/9/58.

▲ B. C., Vancouver—JET MAINTENANCE BASE—Trans-Canada Air Lines, 1080 University, Montreal, Que., plans by H. N. Semmens & Assocs., 1272 W. Pender, steel, concrete jet maintenance base, Millwright shop, stores, 2 story office block, hangars, Vancouver International Airport, $5,000,000. Phillips, Barratt & Partners, 2090 W. 4th St., engrs.

PUBLIC BUILDINGS

▲ Ala., Tuscaloosa—RESIDENCE HALL—University of Alabama, plans by Wilmot C. Douglas-Carl Moseley, Jr., 2922 7 Ave. S., Birmingham, men's residence hall, $2,000,000.

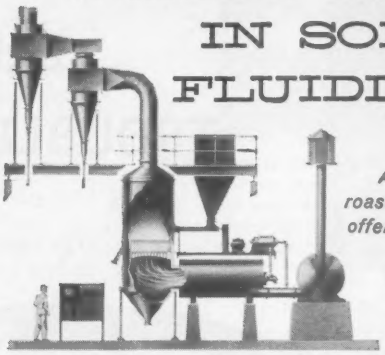
▲ Calif., Berkeley—EARL WARREN LEGAL CENTER—Regents of University of California, Admin. Bldg., Earl Warren Legal Center, incl. conference hall,

(Continued on page 56)

Process Trends from DORR-OLIVER

A SERVICE TO THE PROCESSING INDUSTRIES

WHAT'S NEXT IN SOLIDS FLUIDIZATION?



A versatile drying, roasting and calcining technique offers opportunities in chemical processing. Here's a report on developments.

Since Dorr-Oliver first introduced the fluidization technique for non-catalytic applications more than ten years ago, our engineers have been constantly investigating its wide potentialities. From such well established operations as the roasting of sulphide ores, SO_2 production for acid manufacture, drying of fine coal and drying and sizing of lime stone, development is now extending into many fields of chemical processing.

The advantages of FluoSolids®, Dorr-Oliver's system for fluidized bed techniques, are its essential simplicity, its compactness, its low operating and maintenance costs, its ability to take wide feed variations and its inherent adaptability to precise temperature control with simple instrumentation. It has proved particularly effective in drying wet, sticky or otherwise difficult-to-handle materials. In some drying operations, the added benefit of classification by particle size is possible.

At D-O's research and development center, Westport, Connecticut, hundreds of test runs covering many possible new applications have been completed. Typical of these are the drying of heat sensitive polymers, hydrochloric acid and sodium sulphate production by the Hargreaves Process, drying of sodium chlorate crystals and potassium silicon fluorides, drying of chemical precipitates, roasting of furfural residues, and low temperature calcination of phosphates. Opportunities for still further development are far from exhausted.

To sum it up: if you want a continuous, high capacity method of drying or heat treating materials . . . if precise and completely uniform temperatures are needed to prevent, induce, or control chemical or physical action . . . if intimate contact of gases with solids is a necessary part of your processing . . . maybe the Dorrco FluoSolids System is your answer.

Chances are that our engineers have already been working on just such a problem as yours. If they haven't, the information and experience now available should at least provide a good starting point for investigation and evaluation. An inquiry costs nothing — and it may open up mutually rewarding opportunities. Dorr-Oliver Incorporated, Stamford, Connecticut.

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1863 10th St., OAKLAND 20, CALIFORNIA

(Continued from page 53)

auditorium, seminar rooms, research offices and rooms, law students dormitory, dining rooms, etc. $1,350,000.

▲ **Calif., Los Angeles**—SCHOOL—Bd. Educ., 1425 S. San Pedro St., plans by Austin Field & Fry, 2311 W. 3rd St., Carson High School. $4,200,000. CD 6/9/58.

▲ **Colo., Thornton**—SCHOOL—School Dist. No. 12, 810 Eppinger Blvd., plans by Atchison & Kloverstrom, 257 Josephine, Denver, elementary school, high school. $1,975,000. CD 10/15.

▲† **Idaho, Arco**—EXPERIMENTAL ORGANIC COOLER REACTOR—Atomic Energy Comn., Idaho Operations Office, Idaho Falls, experimental organic cooler reactor, National Reactor Testing Station. $6,000,000. Fluor Corp. Ltd., 2500 Atlantic, Los Angeles, Calif., engrs. CD 7/29.

▲ **Ill., Moline**—SCHOOL—School Dist. of Moline, voted $1,850,000 bonds Nov. 17, Junior High School. Bids in summer. CD 11/11.

▲ **Md., Catonsville** — ACTIVE TREATMENT BLDG., etc.—State, Dpt. P. Imprvts., 506 Park Ave., Baltimore, Zone 1, active treatment bldg., $1,400,000; administrative services bldg., $1,300,000; infirmary, $1,200,000, Spring Grove Hospital, for Dpt. Mental Hygiene.

▲ **Mass., Woburn**—SCHOOL—City, City Hall, plans by Edward J. Tedesco, 15 Pleasant St., high school, off Salem St. $3,500,000. Constr. 1960. CD 10/23.

▲ **Mo., Ferguson (St. Louis 35 P.O.)**—SCHOOLS—Ferguson-Florissant School Dist. R-2, Bd. Educ., 655 January Ave., Zone 35, $4,000,000 bond election Feb. 14, McCluer Junior High School addn., 1890 S. Florissant Rd., Florissant, $1,900,000; Junior High School adjacent to 2800 Parker Rd., $1,900,000. Charles W. Lorenz, 700 N. Ballas Rd., Kirkwood 22, Mo., archts.

▲ **Mont., Missoula**—HEALTH SCIENCE—Montana State University, plans by Witwer & Price, 107 E. Main St., 5 story health science. $1,500,000.

▲ **Neb., Omaha**—SCHOOLS—Bd. Educ., 3902 Davenport St., Junior High School, elementary school, Southeast area, $1,500,000; Bancroft School remodeling, 8th and Bancroft Sts., $500,000; school replacing Florence School, 36th and Kling Sts., $500,000; elementary school, 48th St and Redick Ave., $550,000; elementary school, 112 and Leavenworth Sts., $500,000. CD 11/28/55.

▲ **N. Y., Massapequa**—SCHOOL—Bd. Educ. Union Free School Dist. 23, referendum vote Jan. 16, Alfred G. Berner Junior High School, Carmens Rd., Sunrise Hy. and Merrick Rd. $5,545,000. George J. Dippel, 187 Brooklyn Ave., archt.

▲ **N. Y., Mineola**—COURT HOUSE—County Executive, Nassau County, Old County Courthouse, courthouse addn. $4,740,000. To go ahead 1960.

▲ **N. Y., Mount Vernon**—SCHOOL—Bd. Educ., 257 Fourth Ave., voted bonds Dec. 16, A. P. Davis High School. $7,200,000. CD 11/27.

▲ **Tex., Fort Worth** — CRIMINAL COURTS — Tarrant County, Courthouse, plans by Easterwood & Easterwood, 522 N.P. Anderson Bldg., 5 story Criminal Courts, addns. and expansions, $2,000,000. CD 6/23.

▲ **Wash., Seattle**—CITY HALL-OFFICE—City, City-County Bldg., plans by Theo Damm, 516 James St., Seattle, and J. N. McCammon, Meadows Bldg., Dallas, Tex., city hall-office, 4th and Cherry St. $4,000,000. Previous plant for design-construct. Plan abandoned. CD 10/13, under LB.

▲ **Wis., New Berlin**—SCHOOL—New Berlin Union High School Dist. 5, 2125 Meadowmere Parkway, plans by R. N. LeVee & Assocs., 1000 W. College Ave., Appleton, high school. $2,400,000.

▲ **Wis., West Bend**—COURTHOUSE, etc.—Washington Co. plans by R. R. Gauger & Co., First Federal Bldg., St. Paul, courthouse and jail. $1,500,000. CD 5/13.

COMMERCIAL BUILDINGS

▲ **Calif., Oakland**—MOTOR-HOTEL—Linn C. Alexander & Assocs., Developer, Russ Bldg., San Francisco, Calif., plans by James D. Barrington, 305 North Santa Anita, Arcadia, "Oakland Edgewater Motor Hotel" Incl. swimming pool, parking, Hegenberger Rd. $1,500,000. CD 4/24.

▲ **Conn., Hartford**—OFFICE—Connecticut Bank & Trust Co., 560 Main St., plans by Charles F. DuBose, 95 Woodland St., 16 story, 250,000 sq. ft. office, Front and Market Sts., Constitution Plaza. $6,500,000. Emery Roth & Sons, 575 Madison Ave., New York, N. Y., consult. archts. Kahn & Jacobs, 2 Park Ave., New York, N. Y., assoc. archts. CD 11/25.

▲ **Conn., Middletown**—DORMITORIES—Wesleyan University, University Drive, plans by Charles H. Warner, Jr., Castle Heights Ave., Upper Nyack, N. Y., dormitories, $2,000,000. Brown, Lawford & Forbes, 224 E. 46 St., New York, N. Y., assoc. archts. Clark & Rapuano, 830 Third Ave., New York, N. Y., landscape archts. CD 12/9.

▲ **Conn., New Haven**—APARTMENT—University Towers, Inc., 420 Lexington Ave., New York, N. Y., plans by Kahn & Jacobs, 2 Park Ave., New York, N. Y., 16 story apartment, George St., Oak St. Redevelopment Area. $1,750,000. Fred S. Dubin Assocs., 178 S. Whitney St., Hartford, consult. engrs. Garfinkle & Marenberg, 24 W. 45 St., New York, N. Y., structural engrs. CD 11/5.

▲ **Conn., Westport** — SHOPPING CENTER — Village Square, Main St., shopping center. $2,000,000.

▲ **Ky., Louisville**—RESIDENTIAL DEVELOPMENT—Edgar W. Archer, 489 Roberts Ave., 100 unit subdivision residential development. $1,500,000.

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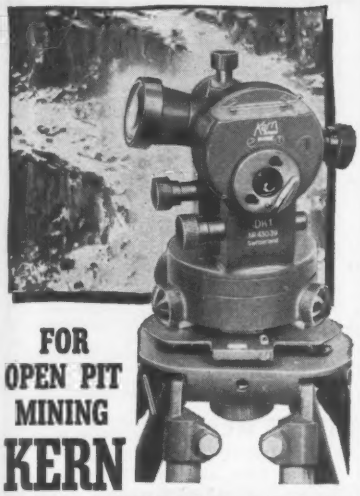

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▲ **Mass., Boston**—HOSPITAL—Beth Israel Hospital, 330 Brookline Ave., plans by Ellerbe & Co., 333 Sibley St., St. Paul, Minn., hospital addn., alterations. $2,000,000. Constr. 1960.

▲ **Mass., Medford** — DORMITORIES, etc. — Tufts University Bd. Trustees, Admin. Bldg., plans by Perry, Shaw, Hepburn & Dean, 31 St. James Ave., Boston, women's dormitory, men's dormitory addn., dining hall, $3,000,000; biology bldg. addn., Campus, $400,000. Constr. 1960.

▲ **Minn., Maplewood**—HEADQUARTERS—Minnesota Mining & Mfg. Co., 900 Bush Ave., St. Paul, plans by Ellerbe & Co., 333 Sibley St., St. Paul, 14 story headquarters. $10,000,000. Constr. to begin soon, completion 1962.

▲ **Minn., St. Anthony** — SHOPPING CENTER — Apache Realty Co., 523 Marquette Ave., Minneapolis, plans by W. Thorsen, 124 South Fourth St., Minneapolis, 400,000 sq. ft. shopping center, N.E. 37th Ave. between Silver Lake Rd. and Stinson Blvd. $7,000,000. Constr. early 1960.

▲ **Mo., Columbia**—HOME, etc.—St. Louis Christian Home, 3033 N. Euclid Ave., St. Louis, Zone 15, plans by P. John Hoener, 4227 Watson Rd., St. Louis, Zone 9, home for 200 mentally and physically retarded children, incl. chapel, administration and diagnosis bldg. and school, Hy. 63, adjacent to Lenoir Home. $1,500,000.

▲ **N. J., Trenton**—STORE—Lit Bros., Broad and Front Sts., plans by Thalheimer & Weitz, 1315 Walnut St., Phila., Pa., department store, supermarket, shops, office and mall, South Broad, South Warren Sts. and Assunpiuk Way. $3,000,000.

▲ **N. Y., Amherst**—HOMES—Juette Builders, 20 Coronation Dr., 100-home Hartford Estates addn. $2,000,000.

▲ **N. Y., Niagara Falls**—HOSPITAL—Mt. St. Mary's Hospital, Sixth St., hospital. $5,000,000.

▲ **Pa., Jenkintown**—APARTMENTS and OFFICE—Foxcroft Bldg. Corp., Benson Apartments, Jenkintown, apartments and office, Meetinghouse Rd. $10,000,000.

▲ **Tex., Fort Worth**—RESIDENCES—W. P. Martin, Euless, 125 brick veneer residences, Oak Crest Estates No. 2, $2,000,000. J. R. Dunaway, 1220 W. Drew, consult. engr.

▲ **Tex., Houston**—OFFICE—L. & R. Bldg. Co., c/o Century Bldg., plans by Lloyd & Morgan, 4605 Montrose Blvd., 13 story masonry office, Travis and Gray Sts. $2,500,000. Constr. in Spring. CD 10/22.

▲ **Tex., Houston**—APARTMENT—James A. McBride & Wilfred P. Bonin, 3831 N. Braeswood Blvd., plans by MacKie & Kamrath, 2713 Ferndale St., and James A. McBride, Proj. Assocs., 2713 Ferndale St., 24 story, 150-unit masonry apartment, Smith St. and Polk Ave. $2,750,000. Walter P. Moore, No. 2 Pinedale Pl., consult. engr. CD 12/15.

▲ **Va., Roanoke and Salem**—SHOPPING CENTER—Lee-Hi Shopping Center, Inc., 3318 Brandon Rd., Roanoke, shopping center between Roanoke and Salem. $2,500,000.

▲ **Newfoundland, St. John's**—HOSPITAL—Roman Catholic Episcopal Corp., St. Claire's Mercy Hospital, 6 story hospital wing addn. $1,250,000.

INDUSTRIAL BUILDINGS

▲ **Ind., Jeffersonville**—PLANT—Hooker Chemical Corp., Phosphorous Div., Box 344, Niagara Falls, N. Y., potassium phosphate plant.

▲ **N. Y., Macedon**—RESEARCH AND TECHNICAL SERVICE CENTER—Kordite Corp., 3848 Richard St., 2 story, 50,000 sq. ft. research and technical service center. $2,000,000. United States Industrial Chemicals Div., Natl. Distillers Chemical Corp., 1217 Section Rd., Cincinnati, O., engrs. Bids in March. CD 12/15.

▲ **O., Dayton**—OFFICES—Governors Hill Corp., 3300 S. Dixie, 14 offices, northbound US 25. $7,000,000.

▲ **Tex., Big Spring**—PLANT—Cosden Petroleum Corp., polybutene production plant. $1,750,000.

▲ **Va., Carbo**—POWER PLANT—Appalachian Electric Power Co., 40 Franklin Rd., Roanoke, third unit Clinch River Power Plant, incl. 225,000 kw. generator. $28,000,000.

▲ **Wyo., Cody**—REFINERY—Husky Oil Co., Cody, refinery addn. $8,000,000-$14,000,000. Universal Oil Products Co., 30 E. Algonquin Rd., Des Plaines, Ill., consult. engr. CD 10/28/58.

▲ **B. C., Trail**—PLANT—Consolidated Mining & Smelting Co. of Canada Ltd., Trail, alkali-chlorine plant, Warfield, near here. $2,600,000. CD 10/16/51, under B. C., Kimberly.

UNCLASSIFIED

▲ **Ill., Waukegan**—DOCK, etc.—Waukegan Port Dist., S. Genesee St., harbor work, incl. dock, terminal warehouse, concrete silo. $2,000,000. Bids in Spring.

▲ **Kan., Salina**—PARKING LOTS—City, City Hall, six parking lots. $1,430,000. Bucher & Willis, 629 E. Crawford St., consult. engrs.

▲ **N. J., Elizabeth**—VESSEL BERTHS, etc.—Port of New York Auth., 111 8th Ave., New York 11, N. Y., First stage of Elizabeth-Port Auth. Pier to incl.: 5 vessel berths, 2 transit sheds, 2,200,000 sq. ft. paved area and 8 cargo distribution bldgs., $20,000,000; other phases incl. 24 deep water berths, transit and open storage, transit sheds, cargo distribution bldgs. Total cost $100,000,000.

▲ **Tex., Houston**—WORLD TRADE CENTER—Port Comn., Navigation Dist., c/o Wharf No. 3 or 1519 Capitol Ave., plans by Wilson, Morris, Crain & Anderson, 3330 Graustark St., World Trade Center. $2,500,000. CD 8/28/58.

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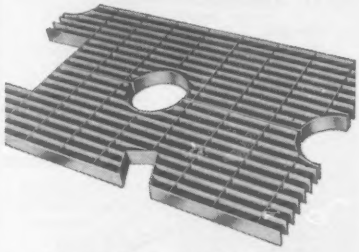

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▲ **Abraham Bennett,** 115 French St., Bristol, Conn., Owner Builds, $5,510,000, 551 HOUSES, Witches Rock Rd., BRISTOL, CONN.

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January 28 New York and Pennsylvania

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▲ **Henry A. Cohen,** dir. Bureau Contracts, State Office Bldg., Albany, N. Y., cancelled bids to have been opened Nov. 18, general contract, sanitary, electric, elevator, moving stairway and conveyor work for BUILDING No. 9, State Office Bldg., Campus site on behalf of New York State Employees' Retirement System, ALBANY, N. Y. CD 10/8.

▲ **Bergen Engineering Co.,** 131 Washington St., Lodi, N. J., CA $1,750,000, TERMINAL, Delancy St., NEWARK, N. J. Branch Motor Express Co., 455 W. 16 St., New York, N. Y. Frank S. Parker Asso., 625 8th Ave., New York, N. Y., engrs.-archts.

▲ **Arthur G. McKee & Co.,** 2300 Chester, Cleveland, O., CA, coal tar distillation equipment, Clairton PLANT, CLAIRTON, PA. U.S. Steel Corp., 325 W. William Penn Place, Pittsburgh, Pa.

▲ **E. Eyring & Sons,** 808 S. Conkling St., Baltimore 24, Md., CA $2,164,875, Holabird JUNIOR HIGH SCHOOL, Delvale Ave., TOWSON, MD. Baltimore Co. Bd. Educ., Aigburth Rd., Towson 4, Md. Bids Dec. 10. CD 12/15, under LB.

SOUTH

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

January 27 Louisiana

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—State Dpt. Hys., 1221 E. Broad, Richmond,

Va.—**Sam Finlay, Inc.,** 1615 Cleveland Ave. S.W., Roanoke, Va., CA $1,623,046, 8.48 mi, two 24 ft. graded roadway on divided interstate highway from intersection U.S. 29-211 east of Geinasville to 0.39 mi. west of U.S. 29-211 Interstate Rte. 66 at Centerville Prince William and Fairfax Counties;

Va.—**Nello L. Teer Co., Inc.,** Trust Bldg., Durham, N. C., CA $1,767,519, paving two 24 ft. graded roadway, 4.6 mi. on divided Washington circumferential highway from Back Lick Rd. Rte. 617 to 0.85 mi. north of Rte. 236, Fairfax Co.;

Va.—**Lee Hy. Paving Corp.,** Roanoke, Va., CA $975,802, paving two 24 ft. graded roadways 3.28 mi. on divided Interstate highway from 2.48 mi. west of Marshall to approx. 2¼ mi. east of Markham, Fauquier Co. Bids Dec. 16, awarded Dec. 23. Grand total $5,989,413. CD 12/21, under LB.

▲† **Perini Corp.,** 73 Montwait Ave., Framingham, Mass., LB $11,767,697, est. $12,908,444 (9 bidders), lock on Georgia side Chattahoochee R., Walter F. George Lock and Dam, ALABAMA and GEORGIA. U. S. Eng., 2301 Grant St., Mobile, Ala. Bids Dec. 17. CD 11/11.

▲ **TENNESSEE**—State Rds. Dpt., Nashville, Tenn.—**Anderson-Gregory Co.,** 407½ Union St., Nashville, Tenn., CA $487,799, grading, drainage entire project, 1 box type bridge and surf. 3.5 mi. with gravel or chert 9.246 mi. on section State Rte. No. 13 beginning at point approx. 9 mi. south of Linden near Flatwoods and extending to State Rte. No. 100 at Linden, Proj. No. F-013-1 (12), Perry Co.;

Tenn.—**Oman Constr. Co.,** Acklen Park, Nashville, Tenn., CA $2,717,572, grading, drainage and 5 concrete deck girder bridges, (3 sets of twin structures and 2 single structures) 6.959 mi. section Interstate Rte. No. 40, beginning at point just south of French Broad River in Jefferson Co. and extending to Carson Springs Rd. in Cocke Co., Proj. No. I-40-B (9) 427, Jefferson and Cocke Counties.

BUILDINGS—LB & CA

▲ **A. C. Sanford, Inc.,** Box 1229, Albany, Ga., CA $2,276,476, single students men's dormitory RESIDENCE HALLS, University of Florida, GAINESVILLE, FLA. Florida State Bd. Control, Admin. Bldg., University of Florida, Gainesville, Fla. Bids Dec. 10, awarded Dec. 22. CD 12/18, under LB.

▲ **Bd. Comrs. Dade Co.,** 10 Floor, Courthouse, Miami, Fla., rejected bids Nov. 24, CRIMINAL COURTS BLDG., MIAMI, FLA. Will re-advertise. LB $5,439,000. CD 12/2, under LB.

▲ **Abraham Constr. Co.,** Box 2870, Baton Rouge, La., CA $2,060,000, steel frame, brick, concrete block McKinley HIGH SCHOOL (7 bldgs.), BATON ROUGE, LA. East Baton Rouge Parish School Bd., 805 St. Louis St., Baton Rouge, La. Bids Dec. 15, awarded Dec. 18. CD 12/18, under LB.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

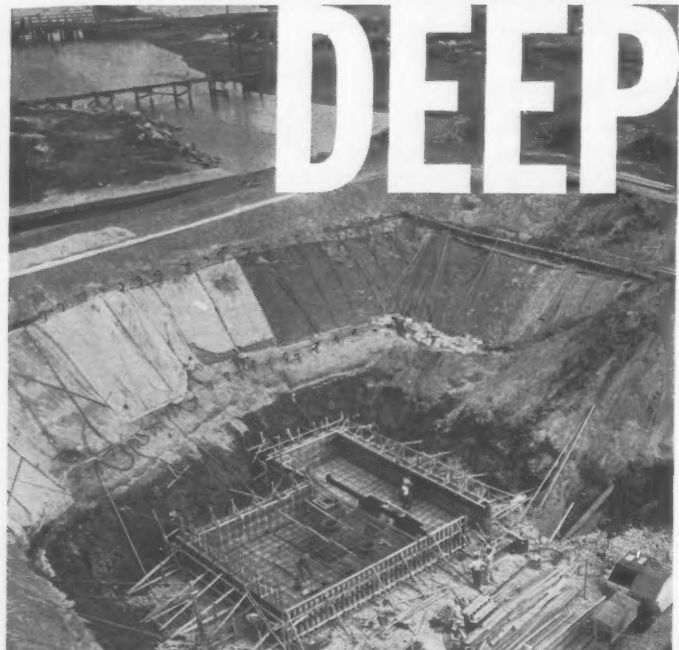
January 12 Wisconsin

STREETS AND ROADS

January 12 Wisconsin

BUILDINGS—BA

▲† **Ill., Danville**—ADMISSION AND TREATMENT—BA 1/12—Veterans Admin., Munitions Bldg., Wash., D. C., Admission and Treatment Bldg. No. 98, at Veterans Administration Hospital. Extended date. CD 10/28.



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HEAVY CONSTRUCTION—LB & CA

▲ **OHIO**—State Hy. Dpt., State Dept. Bldg., Columbus, Zone 15, Bids opened 12/18,

O.—**The Horvitz Co.**, 4375 E. 146th St., Cleveland, O. LB **$3,869,883,** est. $4,432,500 (4 bidders) Type T-71 and structures 1.969 mi. SR 2-22.97, ACI 90-1 (18) 10 new, I-329 (12) old, City of Cleveland, Village of Bratenahl, Proj. 572, Cuyahoga Co.;

O.—**V. N. Holderman & Sons Co.**, 890 Oakland Park Ave., Columbus, O., LB **$2,116,856,** est. $2,283,900 (15 bidders), Type T-71 and structure 0.099 mi. SR 1-23.78 I-71-3 (21) 110, City of Columbus, Proj. 573, Franklin Co.;

O.—**A. J. Baltes, Inc.**, 11 Olive St., Norwalk, O., LB **$3,998,231,** est. $4,484,800 (12 bidders), Type T-71 structures 4.348 mi. USR 25-4.17, ACI 75.1 (33) 44 S-SG-308 (4) Village of West Carrollton, Proj. 574, Montgomery Co.

MISSISSIPPI TO ROCKIES

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 12 Iowa — January 19, 22 Kansas
January 22 Oklahoma — January 26 Texas

STREETS AND ROADS

January 12 Iowa — January 19, 22 Kansas
January 22 Oklahoma — January 26 Texas

▲ **Okla., Tulsa**—AIRPORT TERMINAL—BA 2/2—City, City Hall, airport terminal, facilities, Tulsa Airport, $4,000,000. Plans deposit $100. Murray-Jones & Murray, 4238 S. Peoria St., archts. CD 6/2/58.

BUILDINGS—SLC

▲ **Tex., Houston** — OFFICE — Melvin A. Silverman & Assocs., 2923 Shenandoah St., soon lets contract 10 story, 212,000 sq. ft. tower office. $2,500,000-$5,000,000. Walter P. Moore, 2 Pinedale Pl. and T. A. Naman & Assocs., 2126 Welch St., engrs. CD 10/24/58.

FAR WEST

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

BRIDGES

January 20, 21 California

STREETS AND ROADS

January 15, 20 February 4, 11 California

▲† **Idaho, Mountain Home**—TECHNICAL FACILITIES—BA 2/24—U. S. Eng., City-County Airport, Walla Walla, Wash., technical facilities (Titan missile base) Mountain Home Air Force Base, WS107A-2, ENG-45-164-60-1, $30,000,000. Plans deposit $200. CD 12/23.

BUILDINGS—BA

▲ **Ariz., Phoenix**—HOTEL—BA 1/20—Arizona Opportunities, Inc., 1828 N. Central Ave., 8 story, Charterhouse Alez-Zon Hotel, SW corner of Central Ave. and Palm Lane, $3,500,000. Charles G. Polacek, 3424 N. Central archt. Hotel Corp. of America, lessee. CD 5/14.

HEAVY CONSTRUCTION—LB & CA

▲ **Williams & Burrows, Inc.**, 500 Harbor Blvd., Belmont, Calif., CA **$2,278,882,** reconstr. Central Reservoir near 23rd Ave. and MacArthur Blvd. involving 11,000 cu. yd. excav., 19,000 cu. yd. embankment, 2,200 cu. yd. concrete, etc. OAKLAND, CALIF. East Bay Municipal Utility Dist., 2130 Adeline St., Oakland, Calif. Bids Dec. 11. CD 12/18, under LB.

CANADA

HEAVY CONSTRUCTION—BA

STATE HIGHWAY LETTINGS

STREETS AND ROADS

January 13 Ontario

▲ **Saskatchewan**—BA 1/26—Saskatchewan Power Corp., 1739 Cornwall St., Regina, 13,000 tons reinforcing steel and 47,000 tons portland cement, Hydro-Electric Project, Squaw Rapids. Crippen Wright Engineering Ltd., 207 W. Hastings St., Vancouver, B. C., engrs. CD 9/8.

BUILDINGS—LB & CA

▲ **J. L. Guay & Frere Ltd.**, 6900 Cote des Neiges Rd., Montreal, Que., CA Est. **$5,000,000,** 3 story WING, 5 story OUTPATIENTS DEPARTMENT, 331-bed HOSPITAL addn., HALIFAX, N. S. Sisters of Charity, Mount St. Stephen, Halifax, N. S. Bids Dec. 10. CD 11/24.

▲ **Perini Ltd.**, 49 Jackes Ave., Toronto, Ont., CA Est. **$2,500,000,** 12 story OFFICE, TORONTO, ONT. 48 Yonge St. Ltd., c/o Page & Steele, archts., 72 St. Clair Ave. W., Toronto, Ont.

LATIN AMERICA

BUILDINGS—BA

▲ **Argentina**—LUBRICATING PLANT, etc.—BA 3/31—Yacimientos Petroliferos Fiscales, Govt. Argentina, Av. R. S. Pena 777, Buenos Aires, lubricating and gasoline processing plant, Campo Duran, Salta. $15,000,000. CD 12/4.

HEAVY CONSTRUCTION—LB & CA

▲ **ARGENTINA**—Gobernacion, Resistencia, Chaco, **Gemarca S.A.**, Caracas, Venezuela, CA Est. **$11,000,000,** 260 mi. highway and country roads, Resistencia, Chaco.

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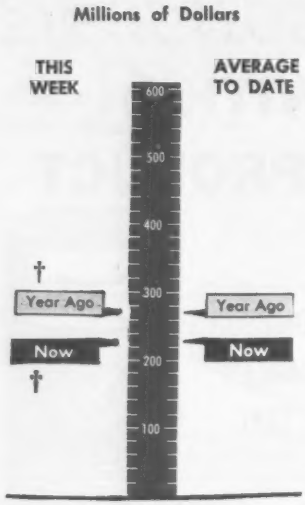
Construction Scoreboard

CONTRACTS ...



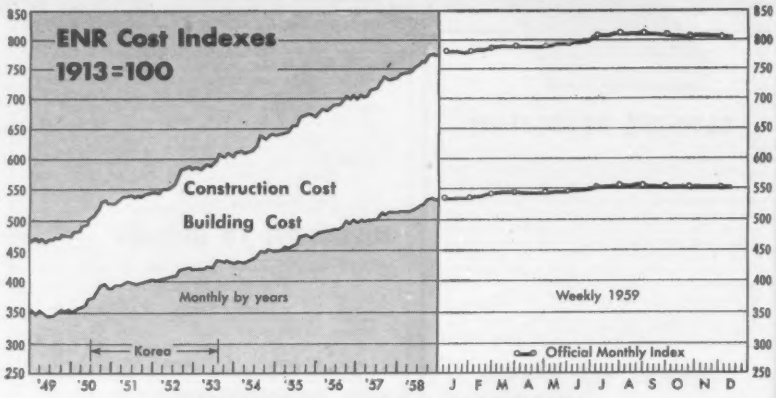
AMOUNT OF CONTRACTS LET

	†This Week	Cum. 1 wk 1960	# Chge '59-'60
	millions		%
All Heavy Constr....	$231.4	$231.4	−15
By Ownership			
PRIVATE	101.2	101.2	+62
PUBLIC	130.2	130.2	−38
State & Municipal..	88.9	88.9	−40
Federal	41.3	41.3	−36
By Type of Work			
PUBLIC			
Waterworks	7.5	7.5	+134
Sewerage	12.6	12.6	−49
Bridges*	8.4	8.4	−30
Highways	29.8	29.8	−47
Earthworks, Dams & Waterways	19.8	19.8	+19
Buildings:			
Excl. Housing	18.1	18.1	−60
Housing	9.0	9.0	+18
Unclassified	25.1	25.1	−46
PRIVATE			
Buildings:			
Mass Housing	34.7	34.7	+30
Commercial	15.2	15.2	−40
Industrial	46.4	46.4	+572
Unclassified	4.8	4.8	+37

* Includes private bridges
† 4 day week
# Revised to include Alaska and Hawaii, (For 1959, '58 totals for Continental U. S. see pp. 18, 64)
NOTE: Minimum size projects included are: Waterworks and waterways, $53,000; other public works, $88,000; industrial buildings, $110,000; other buildings, $400,000.

CAPITAL . . .

New Capital For Construction	Week of Dec. 31	Cum. 53 wks 1959	Chge '58-'59
	millions		%
Corporate Securities..	$0.8	$4,164.6	−17
State and Municipal:			
All Except Housing	9.9	5,882.1	− 6
Housing	....	119.7	+ 1
Federal Loans	....	140.2	−30
Federal Aid	....	3,343.4	+29
Total Nonfederal.....	$10.7	$13,650.3	− 4
Federal Appropriations:			
Projects in U. S....	....	$3,564.1	−16
Outside U. S.....	....	22.4	−50
Total New Capital...	$10.7	$17,236.8	− 7


ENR Cost Indexes
1913=100
Construction Cost
Building Cost
Monthly by years
Weekly 1959
Korea
Official Monthly Index
'49 '50 '51 '52 '53 '54 '55 '56 '57 '58 J F M A M J J A S O N D

CURRENT COST INDEXES

ENR INDEXES (1913=100), 20-cities' average	Week of Dec. 31 1959	% Change from Dec. 3 1959	% Change from Jan. 1 1959
Construction Cost	811.98*	+0.4	+4.3
Building Cost	554.34*	+0.3	+3.4

* Official Monthly Index for January 1960

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.

WAGE RATES, 20-cities' average	Jan. 1960	% Change from Dec. 1959	% Change from Jan. 1959
Common	$2.638	+0.4	+5.4
Skilled (average 3 trades)	3.948	+0.2	+4.3
Bricklayers	4.175	+0.1	+3.7
Structural Ironworkers	3.979	+0.1	+4.6
Carpenters	3.69	+0.3	+5.0
Equipment operators (average three types)	3.563	+0.1	+4.3

MATERIAL PRICES, 20-cities' average			
Structural Steel (average 3 mills), per cwt	5.50	0	0
Lumber, 2x4 Fir, per M fbm	121.62	+0.9	+6.0
Lumber, 2x4 Pine, per M fbm	108.92	+0.8	+6.0
Cement, bulk, per bbl	3.982	+0.911	−0.02
Sand, per ton	2.472	0	−3.1
Ready-mixed concrete, per cu yd	14.147	+0.1	+1.2
Gypsum sheathing, ½″x2′x8′, per Msf*	63.290	0	+0.7
Fiber board sheathing, ½″ sq. ed., per Msf*	73.512	0	+2.7
Mineral wool insulation, 3′ batts, per Msf*	68.38	0	−2.8
Crushed stone, 1½″, per ton, CL	2.700	0	−2.1
Concrete blocks, sand/gravel, 8″x8″x16″, each*..	.2495	0	+11.4
	Jan. 1960	Dec. 1959	Jan. 1959
Brick, common per M	39.618	0	+5.6
Lime, hydrated finishing, per ton, CL	39.301	0	+4.0
Structural clay tile, 3x12x12″, per M, 2,000 up*.	185.95	0	+2.6
Vitrified clay sewer pipe, std 12″, per ft	1.429	−3.7	+6.6
Concrete sewer pipe, 12″, per ft	1.367	+1	+4.2

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost 1913=100	Construction Cost 1949=100	Building Cost 1913=100	Building Cost 1949=100	Volume 1913=100	Volume 1949=100
1958 Average	759.16	159.15	524.68	149.15	531	153
1959						
Jan	778.28	163.15	536.23	152.43	460	133
Feb	778.75	163.25	537.25	152.72	472	136
Mar	781.35	163.80	540.32	153.59	586	169
Apr	784.41	164.44	542.93	154.33	532	154
May	790.37	165.69	544.44	154.76	700	202
Jun	795.16	166.69	548.35	155.87	650	188
July	806.69	169.11	551.74	156.84	671	194
Aug	811.15	170.04	554.31	157.60	509	147
Sept	812.56	170.33	555.88	158.01	545	158
Oct	811.40	170.09	555.40	157.88	415	120
Nov	809.78	169.75	554.19	157.53	509	147
Dec	808.63	169.52	552.80R	157.10	436	126
1959 Average	797.39	167.17	547.82	155.72	540	156
1960						
Jan	811.98	170.23	554.34	157.57	....	....

R: revised

What Price Steel Settlement?

- **A steady steel supply is assured by the agreement reached early this week, but prices will probably go up.**

- **How much is not yet known. Until the uncertainty is cleared up, estimating and bidding will continue difficult.**

Relief over an assured steel supply is tempered this week with uncertainty over what steel is going to cost.

Roger M. Blough, board chairman of U. S. Steel Corp. and spokesman for the steel industry, hinted broadly that the steel producers would not hold the cost line.

In a nationally televised speech, he described the steel settlement as "hardly non-inflationary," although conceding the increases won by the steelworkers are smaller this year than in any other postwar contract.

(The contract will cost steel companies about 40 cents an hour over 30 months for wages and benefits, with the first of two seven-cent hourly wage boosts payable on Dec. 1, 1960. The agreement, however, is dated back to last June 30. Work rules are to be worked out as questions arise.)

It seemed unlikely early this week that steel prices would rise as much as they did in '57, and it seemed probable that the steel producers would try to hold the line at least on some items.

Mr. Blough, in his statement, alluded the price competition from foreign producers. (Bars and nails are among the items that have become particularly competitive through the entry of foreign producers in the U. S. market.)

Because of the uncertainty over future steel prices, estimating and bidding for jobs is difficult, contractors and fabricators emphasize.

Many, if not all, would like to obtain escalator clauses in their contracts. But few can—the construction market is too competitive. Competition appears to be most marked in Boston, Seattle, Detroit, San Francisco, Denver, Dallas, Cleveland and New York City.

An industry source in Dallas says commercial contract volume there dropped 15% in the final quarter of last year. The decline is attributed to "uncertainty," and one of the big question marks has been price, he says.

Until agreement was announced, the outlook was rather grim. The steel industry's swift post-injunction return to weekly production levels of 90% to 96% has kept the construction industry rolling relatively smoothly. But that's all.

After 60 days or so of production, only enough steel has been provided to continue going jobs and restart projects halted just before the Taft-Hartley injunction on November 7.

There has been little, if any, building of inventories. Finished steel is being rushed immediately into production at construction sites, in fabricators' shops and in plants of construction equipment and materials manufacturers.

Despite the rapid recovery of production, shortages of key materials exist to some extent in all 12 cities checked by ENR.

The condition of steel stocks can be measured generally by a recent report of the Steel Service Center Institute (formerly American Steel Warehouse Association).

When the strike started last July warehouses held 3.7 million tons of steel. On December 25 they had 925,000 tons, or just 12.1% more than the warehouse low point of 825,000 tons, recorded shortly after the steel mills reopened. However, a large but unknown quantity of steel is "in transit," reports Robert Welch, executive secretary of the warehouse group.

The greatest shortage of construction steel appears to be in the Midwest. Coastal areas are generally better off, although there are spot shortages in some products.

Construction machinery manufactures say at least 90% of the steel now being delivered is going right to the production line.

Contractors in Houston and Dallas are still in pretty good condition. Full impact of the strike generally was not felt in those areas, according to a spokesman for the Dallas Chapter of Associated General Contractors.

In Houston foreign steel played a major part in easing the pinch. Imported steel reportedly accounts for half the Houston supply. The ratio is not as large in Dallas, where rail freight rates reduce the price advantage.

Supplies in Dallas were not depleted as much as expected because there were no contracts for large structures let during the final quarter of 1959, according to Julian Capers of the AGC in Dallas.

Fabricators in the area say they are quoting normal delivery time although they are now noticing some tightening of supplies in wide flange sections and some types of plate.

They also report fairly general use of imported steel.

Steel imports during the first nine months of 1959 totaled slightly more than 3 million tons, according to government figures. Of that amount, about 71%, or 2.1 million tons, was for construction.

Steel imports for all of 1959 are expected to be about 3.6 million tons, according to Robert M. Buddington, vice president of sales, Inland Steel Co. That would be equal to 5.4% of domestic steel shipments. In 1957, imports equaled only 1.5% of 1957 domestic shipments, he said.

Florida cities have barely felt the strike. Most construction in the state is reinforced concrete—and bars and mesh have been, and still are, in plentiful supply. Those steel materials were so heavily imported that Truscon Steel Division of Republic Steel Corp. no longer supplies rebars in the state. However, new purchases of foreign steel are declining because of climbing prices. To make foreign steel attractive, some jobbers say, there has to be a price advantage over the domestic product of $10 or more a ton.

In New York City, some fabricators are only now starting to feel the pinch. They have finished jobs for which they had steel, and are waiting to get their full orders, or at least 90% of them. One company could not maintain its shipments and has cut its work force to one-third normal size.

Albert Alpern of Grand Iron Works says mills are quoting four to five months delivery, compared to two or three in pre-strike days.

(*Turn the page*)

Another New York City fabricator, Jack Holland of Simon Holland & Son, Inc., is starting to receive all material ordered before the strike, plus 20% of orders since July.

In Chicago, supplies are spotty, with inventories of structural products out of balance. As in most cities, wide flange beams are tightest.

Improved inventories are not expected for about six months.

Chicago is the only city forecasting a price increase no matter what happens to the price of steel at the mills. The prediction of higher prices, however, applied only to warehouses.

Los Angeles contractors say that until now, the steel supply has not been too bad. But now some shortages are showing up. Steel now being produced is not filling the gap because mills are turning out only certain sizes, they report.

Standard structurals are booked through February and shortages in various sizes are expected to appear in the next 30 to 60 days.

The shortage of wide flange beams is particularly critical.

Halt to Bid Shopping Sought by School Board

Subcontractors in the Nashville area may get some help from the community in their attempts to eliminate bid shopping on local school construction.

Davidson County School Board is seeking greater control over the choice of subcontractors on school construction jobs. A report by the board's chairman accuses general contractors of forcing subs to pare their bids after the general contractor wins a school construction contract.

Manhattan Builders Keep Area's Boom Moving

The postwar office building boom in Manhattan Island continued to show zip last year.

Nineteen office buildings containing 6.4 million sq ft were completed last year, the Real Estate Board of New York reports. That brings the total of postwar structures completed to 116, containing 33.6 million sq ft.

An additional 16 buildings that will supply 11.1 million sq ft were under way when the year ended. And plans are on file with the city's Department of Buildings for 15 more structures to contain 6.6 million sq ft.

The three categories—completed, under way and on file—brings the city's postwar total to 147 buildings with 51.3 million sq ft.

Lumber Grade Pact Coming

Chances are good the Federal Housing Administration and Canadian lumber producers will reach some agreement this month on framing lumber grade marks. An accord would ease the threat of a lumber shortage and higher prices in this country for house-framing materials.

A storm broke in Canada soon after FHA ordered that grade-marked framing lumber be used in all houses built under FHA inspection after April 1. (ENR Nov. 19, 1959, p. 41). It meant that lumber shipments from British Columbia valued between $60 million and $80 million were threatened with cancellation.

Only 10 out of over 600 mills in the region could supply a recognized grade stamp, Canadian officials said. The nearest recognized grading agency, Pacific Coast Lumber Inspection Bureau, would need 50 more inspectors to cover all the mills. It would take at least one year to train that many men, the Inspection Bureau said.

The lumber market apparently sensed the possibilities inherent in the FHA order. Prices rose in four major cities two weeks ago and since then the market has been firm despite lower demand for lumber caused by the housing downturn. The situation was described by a major New York City dealer as "very bullish."

Meanwhile, the FHA action brought J. H. Jenkins to Washington from Ottawa. He is chief of the Forest Products Laboratories, Division of Northern Affairs and National Resources.

With approval of W. Beverley Mason, Jr., Assistant FHA Commissioner for Technical Standards, Mr. Jenkins took back a plan that will now have to be carried out by regional associations of Canadian lumber producers.

The associations must work up standards, grade markings and a seal that will meet with the approval of FHA and the American Lumber Standards Committee. The committee is a U.S. Commerce Department-lumber industry group appointed by the Secretary of Commerce.

Mr. Jenkins expects to be in Washington next week with the information. And he told ENR that he expects that most of British Columbia's lumber production capacity will be operating in three months with the approved grade markings.

Public Works 'Bank' Suggested

New York State's Gov. Nelson A. Rockefeller will push for a public works "bank" during the current state legislative session.

His plan would create a planned stockpile of public works to be used in times of recession (see editorial, p. 84). Governor Rockefeller compares the proposal to the federal Public Works Authority (PWA), a depression-born child of the late President Franklin D. Roosevelt.

Big difference, however, is that the PWA was a continuing "crash program" providing for public works construction to create work.

Mr. Rockefeller's plan would only be used in the future to provide employment when "pockets of recession" bring unemployment in the state.

To some extent, Governor Rockefeller's plan runs counter to recent thinking in Washington on the efficacy of using massive public works programs as a weapon against economic downturns. Top economists testifying before the Joint Economic Committee of Congress on national economic health and growth played this basic theme: The day of pump-priming is past. It is a crude and inevitably poorly timed device to use against recessions, and it should be removed from the nation's political arena (ENR Nov. 5, 1959, p. 21).

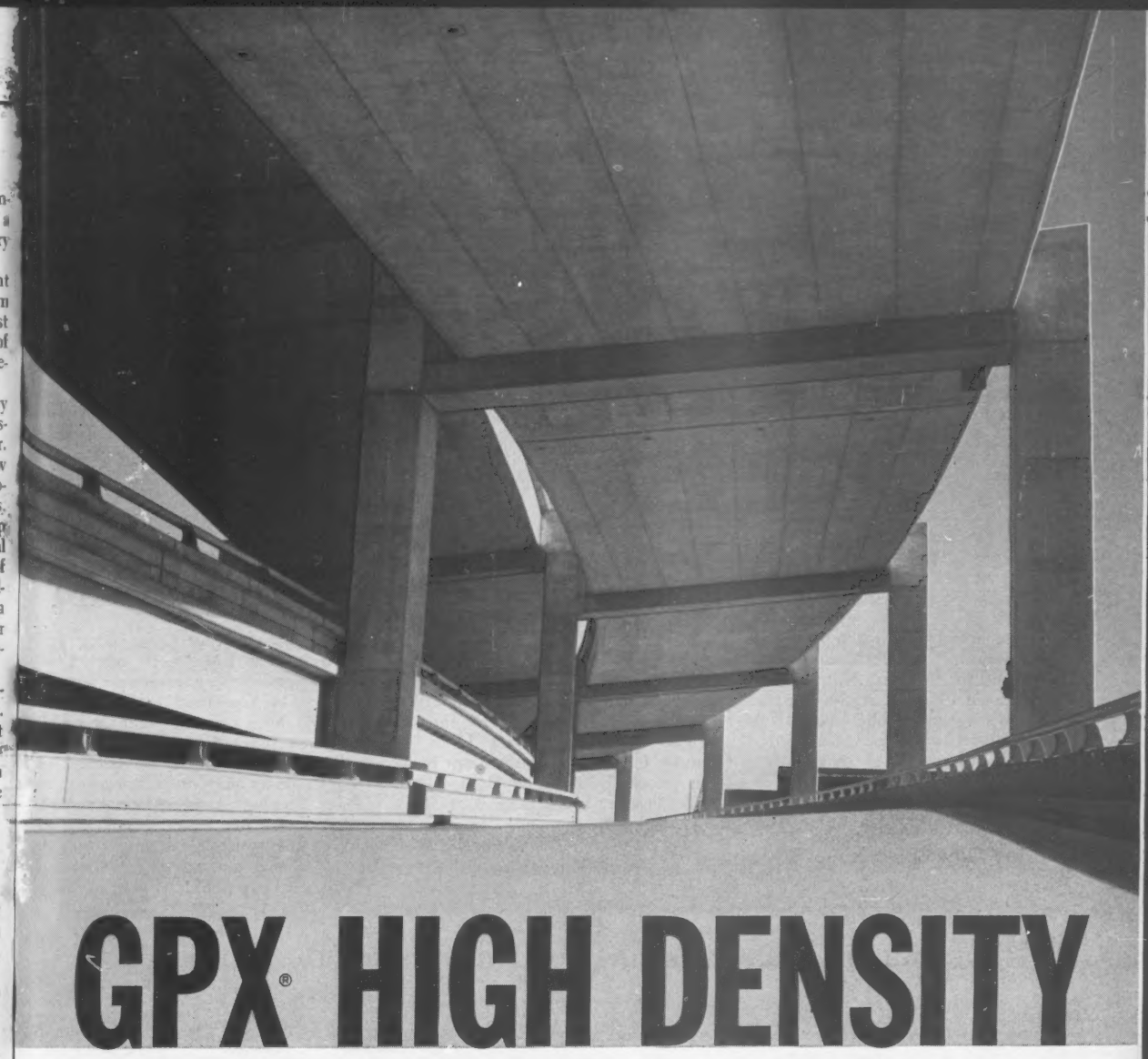
The governor's proposal, carrying no price tag, is linked to two other recommendations involving public works. The package is part of a major reorganization of state government recommended by Mr. Rockefeller.

The other proposals submitted last week in a memorandum to key legislators are:

- Centralize control and responsibility for public works in the office of the governor and provide the governor with information from state departments on the need for public works projects.
- Amend the State Constitution to allow the governor to ask voters for approval of a package of public works bond spending. Now, referendums must be on specific projects.

Centralization would eliminate responsibilities of the present Division of Public Works. Currently, the state is split up into reporting or administrative districts by the Departments of Public Works, Commerce and Labor.

(*B&F continued p. 64*)



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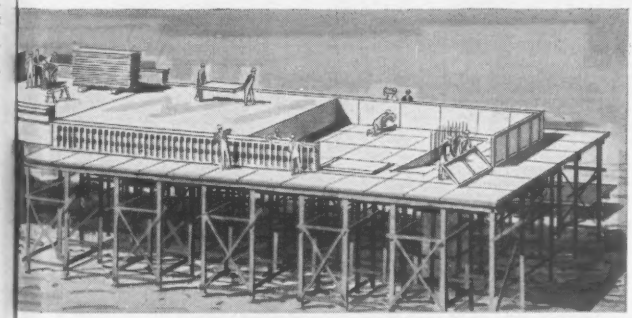

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December Awards Put '59 Ahead of '58

Construction contractors signed up $1.6 billion worth of new business in the final month of 1959. That's 13% less than the weekly rate of November and 6% short of December 1958.

The year-end dip, however, did not prevent a gain for all of 1959, so it goes into ENR's books as the second biggest year on record with a contract award total of $20.3 billion (see p. 17). A 4% gain over 1958, according to ENR data.

Three large missile base installation awards, plus two major dam-site projects in Ohio-West Virginia and Oregon-Washington, pushed federal contracts in December 21% ahead of the weekly rate of both November 1959 and December 1958. But the federal total for the year still was 5% short of 1958.

Private industry awards topped public activity for the fifth consecutive month and for the year. Not since the boom year of 1956 has private construction outstripped public works. At $10.4 billion, 1959 was 32% ahead of 1958, despite the steel strike and a tight money market. That makes 1959 the third best year on record.

For the month, private contracts totaled $869 million, a 12% drop from November, but 24% ahead of one year ago.

Behind 1959's resurgence in private construction was the phenomenal recovery in industrial building. Close to $3 billion worth of new plants went to contractors last year, a 67% increase over 1958. December contracts dropped sharply, due in part to the uncertainties over the availability of steel. The setback, however, is temporary.

Private mass housing was also a star performer in 1959. It chalked up $4.7 billion in new contracts for a 23% gain over 1958—and that in the face of higher interest rates. Although December was 11% below the November pace, it was 8% ahead of December 1958.

Shopping centers and office buildings put commercial building at a new peak. For the full year, commercial contracts of $2.2 billion are 5% above the previous record, established in 1956. December contracts were 9% below November but 35% above December 1958. And, the commercial category is slated for further gains and a new record this year.

Considering the roadblocks confronting public works in 1959—particularly reduced federal aid for highways—the $9.9 billion of new projects awarded in 1959 was a respectable total. It was second to record 1958, and highway work was roaring.

Cost Indexes Renew Their Climb

Sudden firmness in the lumber market, higher prices for cement and a number of deferred wage boosts, combined to halt the three-month downtrend in ENR's 20-Cities Cost Indexes.

The Construction Cost Index for January is up to 812, only a hair below the record 812.6 in September. The Building Cost Index value is at 554.3. The record for that index was also recorded in September when the value was 555.9. Both indexes are based on 1913 = 100.

The Construction Cost Index and Building Cost Index both enter 1960 showing generous increases over January 1959. The Construction Cost Index is 4.4% above a year ago and the building Cost Index is up 3.4%.

The sudden halt in the decline of lumber prices may prove temporary as lower housing starts reduce demand. Also, threat of a shortage of lumber and higher prices stemming from an FHA lumber grading requirement has been eased (see p. 62).

Engineering Construction Contracts for December

Five Weeks—Thousands of Dollars (000 Omitted)

	December, 1959								Twelve Months Continental U. S. Cumulative			
	New England	Middle Atlantic	South	Mid-West	Mississippi to Rockies	Far West	Total Continental U. S.	% Change Dec. (Av wk)	1959 (53 wks)	1958 (52 wks)	% Change '58 to '59 (Av wk)	Canada Dec. 1959
Public Works, Total	21,628	143,114	129,077	79,780	174,044	173,189	720,832	−27	9,891,023†	11,434,452	−15	83,489
Waterworks	69	3,895	5,460	2,264	2,889	1,903	16,480	−40	373,241	306,256	+20	1,396
Sewerage	561	8,183	8,643	11,875	12,230	5,325	46,817	−32	653,219	617,830	+ 4	5,539
Bridges	400	2,170	12,914	4,310	10,224	8,059	38,077	−37	556,570†	702,737	−22	2,870
Earthwork, waterways	275	5,397	17,970	12,407	8,787	42,712	87,548	+19	910,830	1,044,048	−14	11,332
Streets and roads	3,889	45,130	38,050	26,375	47,530	25,914	186,888	−51	2,886,921	3,729,217	−24	10,906
Buildings: Residential	3,405	.....	4,894	1,507	3,588	1,301	14,695	−74	570,957	1,054,904	−47	6,384
Other	11,265	58,735	29,063	17,494	22,054	45,563	184,174	−13	2,575,296	2,609,571	− 3	19,138
Unclassified	1,764	19,604	12,083	3,548	66,742	42,412	146,153	+88	1,363,989	1,369,289	− 2	25,924
State and Municipal	17,904	131,096	93,092	63,070	99,926	85,243	490,331	−39	7,142,529	8,608,411	−19	49,152
Federal	3,724	12,018	35,985	16,710	74,118	87,946	230,501	+21	2,748,494	2,826,041	− 5	34,377
Private, Total	48,037	203,404	177,885	91,282	237,064	111,522	869,194	+24	10,387,952	7,730,182	+32	37,364
Bridges	.....	.....	480	.....	.....	700	1,180	+75	12,353	10,685	+14	.....
Buildings: Industrial	3,680	37,270	71,128	48,169	27,455	31,280	218,982	+39	2,980,585	1,755,973	+67	7,508
Mass housing	35,471	145,955	50,881	16,993	93,135	49,961	392,396	+ 8	4,693,833	3,739,213	+23	15,950
Commercial	8,786	17,579	47,910	22,530	44,575	25,461	166,841	+35	2,152,064	1,795,089	+18	7,481
Unclassified	100	2,600	7,486	3,590	71,899	4,120	89,795	+52	549,117	429,222	+22	6,425
Total Dec. 1959—5 weeks	69,665	346,518	306,962	171,062	411,108	284,711	1,590,026*	− 6	.....	.....	....	120,853
Total Nov. 1959—4 weeks	85,950	317,687	289,881	256,589	275,849	232,080	1,458,036*	....	.....	.....	....	95,205
Total Dec. 1958—4 weeks	91,206	337,730	244,179	239,123	280,358	159,244	1,351,840*	....	.....	.....	....	67,687
Twelve Months—1959	1,270,440	4,381,873	3,592,652†	3,506,548	4,244,807	3,282,655	.....	....	20,278,975*†	.....	+ 4	1,479,358
Twelve Months—1958	1,288,788	4,776,553	2,732,936	3,457,695	3,921,565	2,987,097	.....	....	.....	19,164,634*	....	1,557,191
% Ch'ge '58 to '59 (Av wk)	− 3	−10	+29	− 1	+ 6	+ 8	.....	....	.....	.....	....	− 7

* Not including Alaska & Hawaii:
Add: Alaska Dec. '59: 1,365 Nov. '59: 2,300 12 Mos. '59: 87,170 12 Mos. '58: 90,116
Hawaii Dec. '59: 9,201 Nov. '59: 1,897 12 Mos. '59: 56,363 12 Mos. '58: 99,896

† Does not include $126 million Chesapeake Bay Bridge-Tunnel contract which has been removed from these statistics until the bonds are sold.

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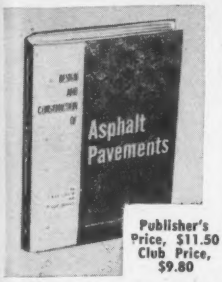

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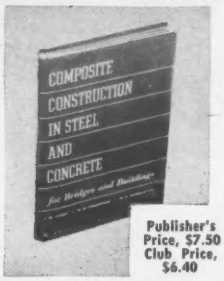

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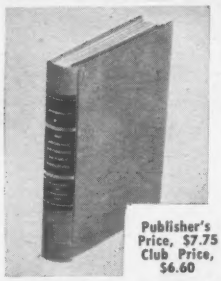

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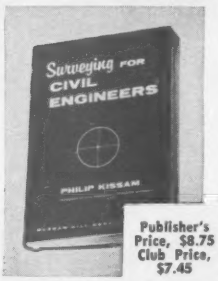

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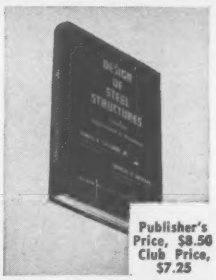

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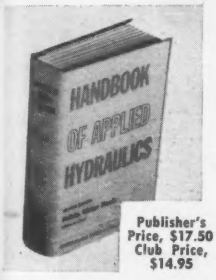

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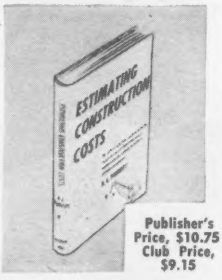

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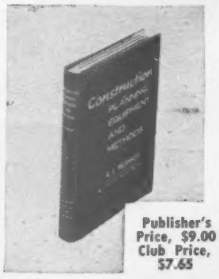

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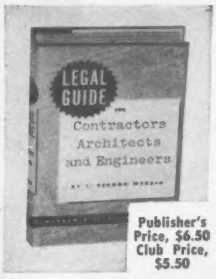

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Wage Increases Are Tapering Off

- **Average increase in hourly wage scales dropped to 13.8 cents last year. Long-term pacts will tend to perpetuate the downward trend.**

- **Fringe benefits appear to be taking up the slack. Some segments of the industry experiment with improvements in bargaining.**

With comparatively little fanfare, the construction industry has slowed down the rapid climb of its hourly wage scales. It has set a more moderate pace for the years immediately ahead and has taken positive steps in several instances to reaffirm the proposition that collective bargaining will work if management and labor give that proposition half a chance.

In its 1959 collective bargaining sessions, the industry negotiated increases ranging from two to 40 cents an hour, but it kept the average of its current wage increases for union workers down to 13.8 cents an hour. That is the lowest in several years. And, through use of long-term contracts, it set its sights on a further drop in 1960 negotiations.

While the resulting outlook is for 1960 wage increases averaging in the vicinity of 13.4 cents an hour, this does not mean that total labor costs are finally moving toward a plateau. The reasons, according to settlement reports received by ENR throughout the year, are twofold:

• **Elimination of wasteful work practices has not become a bargaining factor of any significance.** Efforts in that direction during 1959 were spotty—with results such as these: A flexible lunch hour for Essex County, N. J., cement masons; docking of Chicago sheet metal workers for late arrivals and early quittings; lifting of restrictions on use of power tools and equipment by Chicago plumbers, and of rollers by Pittsburgh painters, and more flexible, less expensive overtime pay provisions for Sacramento glaziers.

• **Fringe benefit activity, relatively brisk in 1959, promises to remain an increasingly costly factor** as building tradesmen seek to catch up with workers in other industries. The continuing trend toward new or improved pension, vacation, holiday, health and welfare benefits is apt to more than offset any apparent savings in basic rate increases. Last year's low wage increase average of 13.8 cents an hour was accounted for, at least in part, by substituting fringe benefits for pay increases, with or without a wage freeze.

This over-all picture, however, is not as gloomy as it may sound to those made pessimistic by a year of general labor strife.

Despite the fanfare of the big industrial strikes and the long construction disputes in Alaska and Glen Canyon, 1959 construction settlements were reached with proportionately fewer strikes than the year before. Strikes occurred in only 17% of last year's bargaining situations reported to ENR, compared to 28% in 1958. Most frequent of the non-wage stumbling blocks were hiring clauses and travel pay provisions.

Two collateral developments of greater significance were these:

• Running counter to the steel-inspired tenets of the National Association of Manufacturers, there was a good deal of uncoordinated groping by contractors and unions alike for realignment of collective bargaining situations on a larger scale, including consolidation of small, and administratively costly fringe benefit funds.

• Along with this interest in more order was a notable desire to settle disputes and to find solutions to mutual problems voluntarily and within the family—a principle reflected in such 1959 developments as the Kaiser Steel settlement, formation of the Construction Industry Joint Conference and George Meany's proposal for a labor-management-White House conference on labor problems.

Biggest indication of the industry's drive for stability in both labor costs and labor relations, however, continued to appear in the increasing prevalence of long-term contracts.

Nearly two-thirds of the 1959 agreements were negotiated for terms longer than one-year (see table), with a two-year term the favorite. Number of contracts with longer than three-year duration was negligible. One year contracts were particularly popular with roofers, boilermakers and iron workers.

In contrast to the 1958 situation, long-term contracts no longer proved cheaper for the first year, and the size of deferred wage increases no longer showed an appreciable decline over the contract term.

Average of the deferred wage increases due this year under the 1959 long-term contract is 13.4 cents, which sets a floor of sorts for this year's settlements. It has proved a reliable indicator in the past. Average 1959 deferred increase under 1958 contracts, for example, was 13.7 cents. In last year's negotiations, 13.7 cents was the ENR average settlement figure in one-year contracts, while 13.8 cents was the average 1959 increase in long-term contracts.

As expected in a heterogeneous industry embracing many hundreds of bargaining situations, wage increases for 1959 ran everywhere from two to 40 cents an hour, pushing the average union construction wage scale up to $3.50 an hour. This compares to a U. S. Labor Department figure of $3.52, which is based on seven trades only.

Highest average 1959 increases were won by the boilermakers, lathers and

The '58 Wage Picture

1. Basic wage hikes were smaller

Type of contract	Average increase in 1959	1958
One-year contract	13.7¢	15.5¢
Long-term contract		
First year	13.8¢	14.5¢
Second year	13.4¢	13.7¢
Third year	13.4¢	12.6¢

2. The slowdown is built in because of long-term contracts

In 1958, 54% of contracts were long term.
In 1959, 65% of contracts were long term.

3. 15¢ hike was most popular

Amount of increase	% of contracts
15¢	27%
10¢	25%
12½¢	8%
20¢	8%
25¢	5%
All other (2¢ to 40¢)	27%

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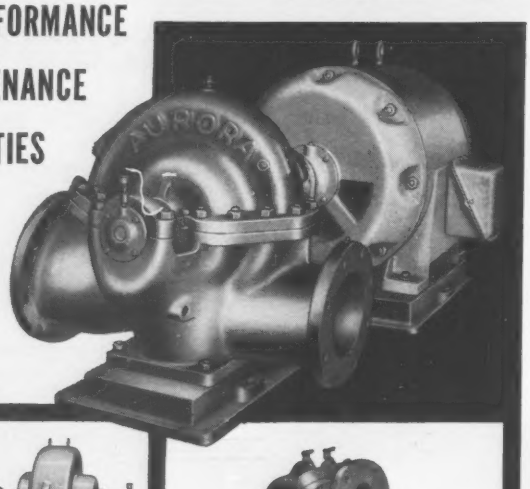

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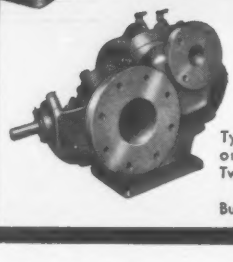

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operating engineers. These trades, incidentally, were the only ones that hit an average above 15 cents. The rest, ranged from 12 to 14.9 cents an hour.

Hourly wage increases expressed in flat sums (such as 12½ cents) instead of in a percentage of the existing rate (6%, for example) were the general rule, although the more costly percentage system continued to be used in some cases for fringe benefits. Cost-of-living escalator clauses, however, all but disappeared.

Payment of annual increases in two or more installments continued to be a popular trend, but the arrangement of installments showed no discernible pattern.

Wage freezes did not occur in any significant quantity. Except in the case of Nashville bricklayers, who accepted a wage freeze for two years, most moratoriums were scheduled for the tag end of long-term contracts.

Negotiation of a wage increase or a fringe benefit, but not both, was prevalent in 1959 bargaining, and diversion of present or prospective wage increases to fringe benefits was fairly common.

Construction workers continued to seek longer vacations and more paid holidays instead of a shorter workweek, and accelerated their drive for pension coverage. Apprentice training (perhaps spurred by the Landrum-Griffin change in the law), health and welfare and severance pay received considerable attention.

Interest in travel and subsistence pay was high, but mixed, with some unions accepting less, others getting more. This was the stumbling block in the Glen Canyon Dam dispute, which was settled late last month when the unions dropped a demand for $6 a day subsistence and accepted premium pay of 50 cents an hour (see p. 19).

One of the upshots of this 1959 squeeze on wages, with its resulting bulge in fringe benefits, is apt to be increasing legislative interest during 1960 in prevailing wages. As Washington, D. C., union contractors have already noted, higher fringe costs add to the competitive advantage of non-union contractors bidding on public works projects covered by the present Davis-Bacon formula.

In retrospect, 1959 collective bargaining in the construction industry has some of the aspects of a shake-down cruise. Wage settlements were tempered and efforts were made to obtain greater uniformity in wages and working conditions.

But perhaps more importantly, bargaining structures and practices were re-examined and, in some cases, improved, to meet the mounting and com-

plex demands of contract negotiation and administration. This, incidentally, is a trend that may be accelerated in 1960 by efforts to ease the reporting and bonding burdens imposed by the Landrum-Griffin law.

Here's a glimpse at some of the groping that occurred in 1959:

Five West Coast builders' associations established a new multi-employer group for joint bargaining purposes. Later, a California chapter of the Associated General Contractors proposed formation of a joint labor committee, with the new group to negotiate and administer labor contracts.

The Wisconsin Road Builders' Association laid the groundwork for statewide negotiations with four basic trades; the Western Conference of Teamsters began to explore area-wide construction contracts for its 262 locals in 13 states; some progress was made in New Jersey toward a state-wide pension fund for carpenters; area wage equalization received attention, and some success, in a few bargaining situations.

Coupled with this type of exploration were some notable efforts to preserve and promote free collective bargaining by giving it a chance to work. They contrast sharply with the bargaining atmosphere created by the steel companies that refused to go along with the Kaiser formula.

In several construction bargaining situations, for example, striking unions went back to work under skeleton contracts while negotiations continued on the knottier problems. Pittsburgh boilermakers subscribed to a back-to-work, voluntary, 90-day cooling off period; Alaska carpenters agreed to arbitrate their travel pay dispute with the AGC; New England iron workers and their employers submitted a show-up time dispute to a joint study committee; Detroit painters and contractors set up a joint committee to study industry problems; industry promotion funds were agreed to by Indianapolis bricklayers and Philadelphia carpenters, who, incidentally, experimented successfully with bargaining months in advance of their contract expiration date.

And out of Pennsylvania came some indication that construction labor and management can agree on a formula to simplify bargaining. There, the Keystone Building Contractors Association (AGC) and millwrights in a 17-county area applied for the first time last year an automatic wage formula that uses millwright rates in 12 jointly selected cities. The rest of the contract, unless reopened for negotiation on proper notice, automatically continues from year to year. The device is described as "simple, sensible and workable" and enables contractors to know what the future rate will be months ahead of its effectiveness.

Whether the '59 bargaining sessions raised more problems than they solved remains to be seen. But at least they demonstrated again to the industry that bargaining is not a casual affair and that the complex economic and legislative aspects of the industry's labor problems are closely related.

How to Use U. S. Training Funds

National defense education funds should not be used exclusively for training technicians, who compete for jobs that construction workers could do. But its up to construction industry members at the local level to make sure at least some of those funds are used for their own training, says Peter T. Schoemann, president of the plumbers union.

Mr. Schoemann said industry members at the national level have "opened the door" for use of the funds to help supplement and improve construction industry apprentice and journeymen training programs. It is now up to those at the local level, he warned, to turn this to their "own advantage."

Ever since the passage of the National Defense Education Act last year, the problem has plagued the construction industry.

The law, which amended the George-Barden Act, is designed to promote development of area vocational education programs to train "highly skilled technicians in recognized occupations requiring scientific knowledge in fields necessary for the national defense."

The U. S. Office of Education took the position that such workers as "electrical technicians" and "refrigeration technicians" could be trained under programs partly financed by the funds the law made available to states, but its initial approach excluded the construction industry and its workers as neither essential to national defense nor highly skilled.

Several large national union and contractor groups interceded and persuaded federal officials to take a broader and more realistic view. The revised regulations that resulted no longer limit use of the funds to technicians to the exclusion of apprentices and journeymen and recognize the existence of construction skills and projects essential to national defense.

OFFICIAL PROPOSALS

Bids: February 16, 1960

Northwest Interceptor
River Rouge Section

ADVERTISEMENT
DEPARTMENT OF PUBLIC WORKS
CITY OF DETROIT, MICHIGAN
CONTRACT PW-3023R

Sealed proposals for the construction of a sewer and alterations to an existing pumping station will be received at the Office of the City Engineer, 528 City-County Building, Detroit 26, Michigan, until 2:00 P.M., Detroit time, Feb. 16, 1960, and then at such place and time publicly opened and read aloud.

The work included in this Contract consists of 1.29 miles of 6'-3" diameter sanitary sewer, to be constructed in tunnel, with the use of compressed air, in Evergreen Road and Warren Avenue, from Ford Road to Pierson; and of alterations to a small existing sanitary pumping station at Pierson and Warren Avenue, converting the structure from a pumping station to an automatically controlled regulating structure.

The Bidding Documents may be examined at the Office of the City Engineer during business hours, and copies may be obtained upon deposit of $25.00 per set which deposit will be refunded upon the return of the Bidding Documents in good condition within 10 days after the date for opening of bids.

Each proposal must be accompanied by a certified check, bank draft, or a satisfactory surety bid bond in an amount not less than 5 percent of the total bid price as guarantee and security for the acceptance of the Contract.

Checks shall be made payable to the Treasurer, City of Detroit.

No proposal once submitted may be withdrawn for at least 45 days after the actual opening of the bids. The City of Detroit reserves the right to waive any irregularity in any bid, or to reject any or all bids should it be deemed for its best interest.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works

M. F. WAGNITZ
City Engineer

Sealed bids for the air conditioning of four buildings in the Panama Canal Zone will be received until January 15, 1960, in the office of the Engineering and Construction Director, Panama Canal Company, Balboa Heights, Canal Zone, and will be publicly opened at that time. The work consists of architectural remodeling, electrical work, and air conditioning the first, second, and third floors of Building 28 in Balboa; first floor and mezzanine of Building 365 in Ancon; first floor of Building 100 in Coco Solo; first, second, and third floors of Building 1010, Cristobal, and performing other appurtenant work. Drawings and specifications are available for examination in Procurement Office, Panama Canal Company, 21 West Street, New York 6, N. Y., and may be obtained free of charge by any interested party from this office. For further information call BOwling Green 9-5380, extension 73.

Sealed bids will be received in the office of Engineering and Construction Director, Balboa Heights, Canal Zone, until February 29, 1960, and will at that time be publicly opened, for dry excavation and drilling and blasting work at Empire Reach, Canal Zone. The work consists of excavation in the dry of 7,000,000 cubic yards of material, drilling 1,000,000 linear feet of blast holes, and the use of 2,000,000 pounds of explosives to break up material which will be excavated and disposed of by Panama Canal Company. Plans and specifications are available for examination and may be obtained from Procurement Office, Panama Canal Company, 21 West Street, New York 6, N. Y. Deposit of $50.00 is required for each set. For further information contact this office or call BOwling Green 9-5380, extension 73. Reference PC 60-41.

OFFICIAL PROPOSALS

Bids: January 28, 1960.

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, Public Buildings Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A. M., eastern standard time on the 28th day of January 1960, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. NICKERSON, District Engineer, 353 Broadway, Albany 1, New York						
Rensselaer (Rte. 40)	FARC 60-4	Schaghticoke-Schaghticoke Hill, S.H. 477 Melrose-Schaghticoke Hill, S.H. 1425A Project F-504(10)	0.52	8" Cem. Conc. Pavt. 24' Wide = 0.49 Mi. Misc. Work = 0.03 Mi. Prestressed Conc. Beam Br. 125'	$21,000 Plans $5	$376,000
Schenectady (Rte. 159)	FARC 60-6	Mariaville-Montgomery Co. Line, S.H. 789 Project F-1024(2)	0.03	Asph. Conc. Pavt. = 0.02 Mi.; Misc. Work = 0.01 Mi. Corr. Multiplate Arch Br. 20.8' Span	$4,800 Plans $5	87,000
Warren	M60-1	Brayton Ave: Canal Bridge over Glens Falls Feeder	....	Strengthening Exist. I-Beam Bridge	$500 Plans $10	8,700
DISTRICT No. 2, L. KETCHUM, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Oneida	M60-2	Roberts Bridge over Erie Canal Br. E-61, Verona, New York	....	Clean. & Paint. 1 Bridge	$200 Plans $10	3,400
DISTRICT No. 3, EARLE E. TOWLSON, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Oswego	U. S. 101	Lock 0-7, Oswego Canal City of Oswego	....	New Gates, Lowering Upper Sills and Misc. Work	5% of Bid Plans $10	(Confidential)
Oswego	U. S. 103	Lock 0-6, Oswego Canal City of Oswego	....	New Gates, Lowering Lower Sills and Misc. Work	5% of Bid Plans $10	(Confidential)
DISTRICT No. 4, B. F. PERRY, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Monroe (Rte. 104)	FAC 60-1	Rochester City-Ridge Road West (Kodak Bridge and Approaches) Project UG-402(9)	0.10	Asph. Conc. Type 2A Pavt. = 0.09 Mi. Misc. Work = 0.01 Mi. R.R.G.S., Comp. I-Beam 60.74'	$10,000 Plans $5	188,000
DISTRICT No. 5, E. G. H. YOUNGMANN, District Engineer, State Office Bldg., 65 Court Street, Buffalo 2, New York						
Cattaraugus (Rte. 18)	FARC 60-25	Bradford-Carrollton, Pt. 1, S.H. 8007 Bradford-Carrollton, Pt. 2, S.H. 8018 & 8018A Bradford-Carrollton, Pt. 3, S.H. 8144 Project F-30(5)	6.78 (2.75 Acc.)	9" Cem. Conc. Pavt. 24' Wide = 6.04 Mi. Asph. Conc. Pavt. = 0.74 Mi. (Access Rds. = 2.75 Mi. Asph. Conc. Pavt.)	$145,000 Plans $5	2,653,000
Cattaraugus (Rte. 242)	FARC 60-9	Little Valley-Randolph, Pts. 1 & 2, S.H. 8149 Little Valley-Randolph, Pt. 3, S.H. 5258A Project F-603(9)	4.67	Asph. Conc. Pavt. = 4.65 Mi. Misc. Work = 0.02 Mi. Corrug. Plate Twin Arch Bridge 36'	$47,000 Plans $5	851,000
Niagara	FAC 60-14	City of Niagara Falls: Hyde Park Boulevard (B Street to Jerauld Avenue) Project U-1128(2)	1.95	Asph. Conc. Pavt. = 1.88 Mi. Misc. Work = 0.07 Mi. Extension of R. C. Twin Box Br. 24'	$100,000 Plans $5	1,837,000
Niagara	FASS 60-1	Lockport Road (County Road No. 132) Project S-528(2)	3.05	9" Unreinf. Cem. Conc. Pave. 24' Wide = 2.96 Mi. Misc. Work = 0.09 Mi.	$35,000 Plans $5	629,000
DISTRICT No. 6, J. H. THOMAS, District Engineer, State Office Bldg., 30 West Main Street, Hornell, New York						
Steuben (Rte. 17)	FARC 60-7	Painted Post-Addison, Pt. 2, S.H. 5094 Painted Post-Addison, Pt. 3, S.H. 5349 Project F-593(11)	3.97	Asphalt Concrete Pavement	$28,000 Plans $5	509,000
DISTRICT No. 7, R. W. SWEET, District Engineer, 444 Van Duzee Street, Watertown, New York						
Jefferson & Lewis (Rte. 12)	FARC 60-3	Burrs Mills-South Champion, S.H. 626 Lewis Co. Line-South Champion, S.H. 1129 Copenhagen, S.H. 937 Project F-1043(4)	1.50	Asph. Conc. Type 1A Pavt. = 1.38 Mi. Misc. Work = 0.12 Mi.	$20,000 Plans $5	397,000
St. Lawrence (Rte. 345)	FARC 60-5	Madrid-Waddington, Pt. 1, S.H. 1262 Madrid-Waddington, Pt. 2, S.H. 966 Waddington Village, S.H. 1125 Project S-110(2)	8.30	Asph. Conc. Type 1A Pavt. = 8.26 Mi. Misc. Work = 0.04 Mi.	$75,000 Plans $5	1,364,000
DISTRICT No. 8, K. G. RAUER, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
ORANGE (Rte. 17K)	RC 60-8	Bloomingburg-Bullville, S. H. 8166	0.35	Asph. Conc. Pavt.	$3,600 Plans $5	65,000
DISTRICT No. 9, J. C. FREDERICK, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome (Rte. 369)	FARC 60-10	Chenango Towpath, S.H. 175 Port Crane-North Fenton, S.H. 963 Project S-815(2)	6.48 (0.21 Acc.)	Asph. Conc. Pavt. Repair Exist. Br. No. 1 Corrug. Plate Twin Arch Br. 25' Comp. W.F. Beam Br. 104.5'	$85,000 Plans $5	1,497,000
Delaware, N. Y. & Wayne, Penn.	I. Br. 60-1	Lordville Interstate Suspension Bridge (Ch. 360 Laws 1936)	0.08	Repairs & Alterations (4" Timber Deck)	$800 Plans $5	15,000
DISTRICT No. 10, M. E. GOUL, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Kings (Int. Tour. Rte. 278)	FIGE 60-1	Interstate Route Connection 512, Gowanus Expressway (36th Street to 53rd St.) Project I-U-278-1(46)	0.84 (1.48 Acc.)	Reinf. Conc. Roadway (on Viaduct) = 0.82 Miles Misc. Work = 0.02 Mi. Sheet Asph. Pavt. (Streets and Ramps) = 1.42 Miles; Cem. Conc. Pavt. (Ramps) = 0.06 Mile; Steel Elevated (Viaduct) Struct. 83 Sp. 4,322.5'	$700,000 Plans $10	12,667,000
Nassau & Suffolk	FARC 60-2	Mineola Village-Jericho Turnpike, S.H. 1785 Wantagh-Central Park, Pt. 3, S.H. 42-3, Massapequa-Glen Cove, S.H. 9017; Coram-Middle Island East, S.H. 8291 Project F-1000(8); F-488(5); S-212(3); S-377(4)	2.54	Drainage & Misc. Work	$50,000 Plans $5	912,000
Nassau (Rte. 25)	FASH 60-20 FARC 60-12	Jericho Turnpike-Floral Park Village Jericho Turnpike, S.H. 9020 Project U-1000(3)	0.76	Demolition of Buildings	$16,000 Plans $5	297,000
New York	FAHRD 60-1	Harlem River Drive (Contract No. 139A) (143rd Street to 145th Street and 153rd Street to 155th Street) Project U-1133(6)	0.35	9" Cem. Conc. Pavt. with Carb. Black = 0.13 Mile Asph. Mac. Pavt. = 0.15 Mi.; Asph. Conc. Pavt. = 0.07 Mi. Rehabilitating Macombs Dam Bridge	$50,000 Plans $5	896,000
New York (Int. Tour. Rte. 95	FICBE 60-1	Interstate Route Connection 511 (Cont. 3) Cross Bronx Expressway (Highbridge Interchange) Project I-95-1(36)	0.13	9" Cem. Conc. Pavt. 26' Var. Wide = 0.09 Mi.; Misc. Work = 0.04 Mi. Highbridge Interchange Ramps; 3 Hy. Seps. Plate Girders 385', 411 'and 317'; Rehabilitating Struct. No. 20 Plate Girder: Misc. Work on Alexander Hamilton Bridge	$180,000 Plans $10	3,313,000

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage), Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1959, as Amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bond shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

J. BURCH McMORRAN
SUPT. OF PUBLIC WORKS

OFFICIAL PROPOSALS

Bids: January 20, 1960

Construction of So. Capitol St. Underpass at "M" St.

District of Columbia—Highway Construction—Department of Highways & Traffic, Dec. 16, 1959. CONSTRUCTION OF SOUTH CAPITOL ST. UNDERPASS AT "M" ST., FEDERAL AID PROJECT NO. F-31(6), consisting of approx. 39,800 cu. yds. Unclassified Excavation; 20,000 cu. yds. reinf. Portland Cement Concrete Pavement, 10"; 1,720 cu. yds. Class BB wall concrete; and 20,300 cu. ft. Class B stone masonry (Invitation No. C-6078-H). Bid forms, plans and specifications are now available from Supervisor, Bid & Contract Division, Procurement Office, D. C., Rm. 404, 499 Pa. Ave., N.W., upon deposit of a certified check for $50.00 per set, payable to D. C. Treasurer. (Phone NA 8-6000, Ext. 2378). SEALED BIDS to be opened 3:00 PM, EST, January 20, 1960, in Room 424, 499 Pa. Ave., N.W. "On January 5, 1960, at 2:00 PM (EST) in Room 500, District Building, 14th and E Streets N.W., Wash., D. C., pre-bid meeting will be held with prospective bidders to answer questions bidders may have on this project."

Bids: February 16, 1960

Main Sewage Treatment Plant Additions

NOTICE IS HEREBY GIVEN that sealed proposals for "Main Sewage Treatment Plant Additions, Stage 3—Sludge Digestion, Grit and Screenings Handling Facilities" will be received by the City of Rochester Purchasing Agent at his office, Room 36, City Hall, No. 20 South Fitzhugh Street, Rochester 14, New York, until 11:00 o'clock A.M. Eastern Standard Time on February 16, 1960, at which place and time they will be publicly opened and read aloud. The proposals shall be for furnishing all material, equipment and labor for the construction and erection of structures and appurtenances, in accordance with the Plans, Specifications and other Contract Documents, prepared by Nussbaumer, Clarke & Velzy, Consulting Engineers for the City of Rochester.

The work is subdivided into four separate Contracts, as follows:

Contract 3A—General Construction
Contract 3B—Piping Equipment and Plumbing
Contract 3C—Electrical Construction
Contract 3D—Heating and Ventilating

Contractors may submit proposals for any one, all four, or any combination of the Contracts.

These Plans, Specifications and other Contract Documents may be examined at the office of Nussbaumer, Clarke & Velzy, 327 Franklin Street, Buffalo 2, New York, and 500 Fifth Avenue, New York 36, N. Y., and may be examined and copies thereof may be obtained at the office of the Purchasing Agent. One copy of the said documents may be obtained upon payment of $100.00 deposit; any bidder returning such copy in good condition within thirty (30) days following the opening of proposals will be refunded $100.00 and any non-bidder so returning such copy will be refunded $50.00.

The City of Rochester reserves the right to reject any or all proposals, and to waive any informalities, and to make an award to other than the low bidder, should the best interest of the City thereby be promoted.

Proposals shall be made on the form provided in the Contract Documents, and each proposal shall be accompanied by a certified check made payable to the City of Rochester, N. Y., in an amount not less than five percent (5%) of the total amount of the proposal, conditioned that the bidder will execute the Contract and deliver the required Performance Bond for the proposed work within ten (10) calendar days after the date of written notice that his proposal has been accepted. For proposals with total amounts in excess of $200,000, or proposals for work financed or aided by any Federal or State agency, a bid bond in the amount of five (5) percent of the amount of the proposal, in proper form, executed by a surety company acceptable to the City, will be accepted in lieu of the aforesaid certified check.

A bidder may not withdraw his proposal within forty-five (45) calendar days after the opening of proposals, but may withdraw his proposal at any time prior to the scheduled time for the opening of proposals.

KENNETH E. PUNNETT
Purchasing Agent
City of Rochester, N. Y.

Dated: Dec. 31, 1959.

OFFICIAL PROPOSALS

Bids: January 14, 1960

Construction of Two General Cargo Vessels

The Iraqi Maritime Transport Company, Baghdad, invites Consulting Engineers and Naval Architects, to submit their offers for preparing drawings, technical specifications, tender conditions, the study of Tenders obtained based on their designs, and if necessary the supervision of the construction of Two numbers 5000 to 6080 tons dead weight general cargo vessel.

Offers shall be sent in a closed sealed envelope by registered mail, or delivered by Hand against receipt, and marked:—

"Tender for design and Supervision of building of Two general Cargo Vessels", to

The Director,
The Iraqi Maritime Transport Company
Shara El-Saadoun,
Baghdad,
Iraq.

Outline Specifications, conditions and other information can be obtained from:

a. The Iraqi Maritime Transport Co., Baghdad or Basrah
b. Iraqi Republic Representatives abroad.

All offers shall be submitted and must reach The Iraqi Maritime Transport Company, Baghdad, before 12 Noon Thursday 14th January 1960.

The specifications are also available at the Embassy of Iraq, 2135 Wyoming Avenue N.W., Washington, D. C.

THE DIRECTOR
IRAQI MARITIME TRANSPORT CO., LTD.

Bids: February 16, 1960

Philadelphia, Penna. Procurement Department Water Department

Sealed bids will be received in Room 313, City Hall Annex, until 2:30 P.M. (E.S.T.) on Tuesday, February 16, 1960, and opened at that time, for Bid No. 2464—Work No. SD-243-SW.

Intercepting Sewer in Vare Avenue, Delaware River Port Authority R/W, Private Property and 26th Street between Mifflin Street and Drainage R/W (former Shunk Street) South of Passyunk Avenue (LOWER SCHUYLKILL EAST SIDE INTERCEPTING SYSTEM).

PRINCIPAL ITEMS OF WORK

Excavation in Tunnel.....	6,450 cu. yds.
Vacuum Processing in Tunnel	19,210 sq. ft.
5'3" dia. Concrete Sewer in Tunnel	4,193 lin. ft.
Manholes (on Tunnel or in Shafts)	8

Proposal forms, questionnaires and specifications may be obtained from the Water Department, in Room 1132, City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penn. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 1230 Arch Street, Philadelphia 3, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1113 City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

CONTRACTORS
WATCH
THIS SECTION
for New Projects

Publish your announcements thru the "Proposal Section" of Engineering News-Record and get their bids.

OFFICIAL PROPOSALS

Bids: See Advertisement

The Port of New York Authority

Sealed proposals for the following work will be received at the Office of the Chief Engineer, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on date indicated, at which time said proposals will be opened and read in Room 1108.

Contract BT-120.021—Port Authority Bus Terminal—Alterations to Rooms 1301-1303, Main Concourse—No deposit required—Bids will be received until 2:30 P.M. on Tuesday, January 26, 1960.

Contract BT-120.022—Port Authority Bus Terminal—Alterations to Room 2226, Suburban Concourse—No deposit required—Bids will be received until 2:30 P.M. on Tuesday, January 26, 1960.

Contract PN-560.007—Port Newark—Buildings 263 & 264—Deposit $30.00 per set of documents—Bids will be received until 2:30 P.M. on Tuesday, February 2, 1960.

Contract documents may be seen at the Office of the Assistant Chief Engineer for Design, Room 1115, 111 Eighth Avenue, New York 11, N. Y. Documents will be furnished upon receipt of the above deposit (each set including one copy of the Contract Drawings) for not more than three sets to any one company. Additional sets will be furnished upon payment of an amount for each set equal to the deposit indicated above, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract directly to the Authority will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
S. Sloan Colt, Chairman

New York, January 7, 1960.

Bids: February 2, 1960

Road Work
Warren County, New York

Notice is hereby given that the Warren County Board of Supervisors will receive sealed bids until 10:30 A.M. Eastern Standard time on February 2, 1960 by Leslie Hayes, Clerk of the Board of Supervisors, Warren County, Lake George, New York for:

GLENS FALLS EAST-WEST BYPASS
COUNTY ROAD 70

Maps, plans, specifications and proposal forms may be seen and obtained at the office of Herrick Osborne, County Superintendent of Highways, Warrensburg, New York.

The deposit for plans and proposal forms for the Contract is $20.00. A refund will be made in full to bidders with the return of each set in good condition, within 30 days of award, or rejection of bids.

Special attention of bidders is called to the New York State Department of Public Works, Division of Construction Specifications dated January 2, 1957, which may be obtained from the Department of Public Works, Alfred E. Smith Building, Albany, New York.

Proposal must be submitted in a sealed envelope with the name of the project plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of Romney C. Patterson, Warren County Treasurer for the sum of $18,000.00. The retention and disposal of the bidding check, execution of Contract and bond shall conform to the provisions of the Highway Laws as set forth in "Information for Bidders."

The right is reserved to reject any or all bids.

Herrick Osborne
Superintendent of Highways
Warren County, New York

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to agency Commission.

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• POSITIONS VACANT

Engineers And Draftsmen—experienced in water supply, water distribution, sewerage or sewage treatment plant design. Excellent opportunity with growing firm. Salary commensurate with ability. Paid vacations, holidays, hospitilization. Address reply with resume to: O'Brien & Gere, Consulting Engineers, 400 East Genesee Street, Syracuse 2, New York.

Construction Superintendent—Qualified to assume full responsibility for direction of lump-sum multi-million dollar freeway project in downtown area of Southern city. Project includes grade separations of all types, drainage and sewer systems. Degree in Civil Engineering preferred, but not mandatory. Salary open with good future assured. Mail complete resume to P-3284, Engineering News-Record.

Chief Engineer—Medium sized steel fabricating plant located Mid West. Sales, Estimating and engineering. Excellent opportunity, salary open, give full particulars and salary requirements, all replies confidential. P-3294, Engineering News-Record.

Industrial Engineer—Western Penna. Fabricator—Prefer man under 40—Starting salary approx. $725—State shop experience, etc. in first letter to P-3292, Engineering News-Record.

Production Manager—Structural steel—Mid-Atlantic area—State salary requirements—Shop experience in first letter to P-3287, Engineering News-Record.

Civil Engineers (2); prefer 1 M.S. in Soils and 1 B.S. Experience not necessary. U.S. Citizen. Reply in full giving availability and salary desired. Arizona Testing Laboratories, Box 1888, Phoenix, Arizona.

Wanted experienced superintendent on high rise building construction by New England contractor with a national operation. Applicant must have proven record. Send all information to P-3307, Engineering News-Record.

Have opening for several recent Civil Engineer Graduates with military obligations completed who desire to learn the construction business. Ambitious, aggressive, dependable, use no intoxicants, willing to start in the field on industrial building and heavy construction, and willing to move. Must be single. We operate throughout Kansas and adjacent states; offer excellent opportunity for advancement. Top wages. Martin K. Eby Construction Co., Inc., P. O. Box 1679, Wichita, Kansas.

Bridge Design Engineer, who is able to take charge of project from inception to completion. Salary open. Apply Ivan R. Bray, Director Personnel, City Hall, Sioux City, Iowa.

Senior Sanitary Engineer to act as consultant to public and private officials in the state on matters of sewage treatment and disposal, water supplies and treatment plants. Requires engineering degree and 3 years' experience in the above or equivalent combination of experience and training. Send complete resume to B. Dearington, Connecticut State Department of Health, State Office Building, Hartford, Connecticut.

(Continued on opposite page)

ASSISTANT PUBLIC WORKS DIRECTOR

ROCKVILLE, MARYLAND

Rockville, Maryland, a rapidly expanding residential suburb of Washington, D.C., with a population of 27,000, has an opening for an Assistant Public Works Director to supervise its Engineering Division and to assist in directing its overall public works operation, which includes water and sewer utilities.

Qualifications: degree in engineering, several years' municipal experience and some supervisory experience in public works design, construction and maintenance. **Position available February 1, 1960. Salary range $8,112—$9,152, in yearly increments, with generous fringe benefits.** Submit complete resume, including personal history, education, experience and references, to the **City Manager, 120 South Washington Street, Rockville, Maryland.**

• POSITIONS VACANT
(Continued from opposite page)

Wanted—Estimator for General Construction. Excellent opportunity for one who can qualify. Must be familiar with takeoff, pricing, purchasing, sub-contracts. For more details send complete resume to Sollitt Construction Company, Inc., 301 Columbia Street, South Bend (24), Indiana.

Civil Engineer wanted. Qualified civil engineer to head Engineering Department of City of New Berlin, Waukesha County, Wisconsin. Make application in writing before January 18th, 1960, to Joseph Rausch, City Clerk, 15445 W. Grange Road, New Berlin, Wisconsin, showing experience and qualifications and references.

Graduate Civil Engineer under 40. Salary open, depending on experience. Submit resume to Henry F. Beisner, City Engineer, Cedar Falls, Iowa.

Municipal Engineer—Civil Engineer with municipal experience, particularly in street, sewerage and drainage work. Must be able to qualify as Chief of Party. Salary range $5600.00 to $6400.00. Board of Public Works, George R. Winters, Director, Town of Wakefield, Mass.

Layout Engineer. For Chicago General Office Engineering Department of leading national food processing company. Board work on plant and equipment projects. Career opportunity for man with Mechanical or Civil Engineering degree and 3-5 years' experience in food or related fields. Excellent salary and liberal company benefits. In reply give complete personal data, experience and education. P-3356, Engineering News-Record.

Wanted—Experienced first class estimator to take-off quantities on piping, ductwork, etc., for large insulation contractor in North Jersey. Apply The Trybee Co., 381 North Midland Avenue, Saddle Brook, N. J. or call SW 1-1170.

Cartographer Urgently Needed in Guam. Salary—$5980.00 to $7475.00 per annum. Two-year contract offered. Furnished housing provided at reasonable rental rate 26 days leave per year. Transportation for employee and dependent furnished to and from Guam. Experience: (a) Bachelor's degree from engineering school or college with major study in surveying; or (b) Graduation from high school, plus four years progressively responsible experience, including cartography, cadastration, geodesy, engineering, and photogrammetry; or (c) Any equivalent combination of experience and training. Travel and processing take about 3 to 4 months. For further information, write via air mail to: R. W. Galloway, Director, Department of Labor and Personnel. Government of Guam, Agana, Guam.

National General Contractor desires top flight building construction executive to head up branch office in Chicago area. Only fully qualified persons need apply. Send complete resume of experience and qualifications to: P-3382, Engineering News-Record.

City Engineer—Able to register as a Civil Engineer in the State of Florida—Salary Maximum $7,500.00. Kindly send resume to G. F. Althouse, City Auditor and Clerk, City of Ormond Beach, Florida, P. O. Box 695. All replies confidential.

• POSITIONS WANTED

Project Management, Contract Negotiations, Administration. 23 yrs. exp. hvy. constr. highways, bridges, harbors, etc., U.S.&O.S. PW-3253, Engineering News-Record.

Superintendent Construction 20 yrs institutional Groups, Industrial, Commercial Engineer. PW-3275, Engineering News-Record.

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Construction Supt. General Construction. PW-8896, Engineering News-Record.

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Construction Supt. Bonafide producer at job or general superintendent level. Engineering background. Eighteen years experience on medium heavy industrial, commercial and institutional work. Available immediately. PW-3308, Engineering News-Record, or phone Akron, Ohio, Walnut 3-9698.

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Project Manager experienced public works Penna. or New York area. PW-3283, Engineering News-Record.

Construction Foreman or Rigging Supt. 25 yrs. experience. Available now. Hydro work a specialty. Speak Portuguese and understand Spanish. PW-3224, Engineering News-Record.

Hydraulic engineer, broadly experienced (some foreign) in river developments, including hydroelectric, storage, irrigation, pumping, supply, control, channels, drainage. Fluent Spanish. PW-3227, Engineering News-Record.

Executive—Contracts Manager, Attorney, Administrator, 15 yrs Legal-Construction Experience, Gov't. contracts, employed. PW-2947, Engineering News-Record.

Engineer, Estimator, Superintendent—available Jan. 1st. 3½ years college, civil engineering, experienced in heavy construction, pile driving, railroads, bridges, docks and marine work. Will furnish complete resume' and references on request. Age 43. PW-3363, Engineering News-Record.

General Superintendent. Wide experience in buildings, proven producer, pilot. PW-3218, Engineering News-Record.

• POSITIONS WANTED

General Superintendent: Have been responsible for administrative direction of project operations, such as, change orders, negotiation of sub-contractors, coordination of contractor's labor forces, processing of owner and sub-contractor requisitions, handling claims, prepared schedules and progress reports, & complete charge of field personnel. Experience in missile sites, hospitals, hangars & servicing docks, factories, & mass housing. Supervised work in Fla., Ill., Pa., N. J., Conn., Ala., & Del. areas Will re-locate. PW-3357, Engineering News-Record.

Estimator-Construction Executive. Age 31— can handle takeoff, pricing, completing bid. Experienced as manager of branch office operation, handling client relations, negotiating, extras and all other phases of activity from estimate to closing. Free to travel or relocate. PW-3354, Engineering News-Record.

Struct. Civil Engr. 30 B.S.C.E. married, 8 yrs exp. design & constr., highways, railroads, bridges, air bases, industrial bldgs., 5 yrs overseas, Canada, Greenland, Far East. Some French & Spanish. Desires overseas position, available immediately. PW-3365, Engineering New-Record.

Telephone & power cable splicer 30 yrs exp. Supervise or Splice. Willing to travel. PW-3351, Engineering News-Record.

Building const. estimator, 42, presently employed New York. Smart bidder public works, schools, corps, etc. Hold sharp field control. Astute businessman. Strong alone, or part of team. A real money asset. Interested opportunity, preferably good mild climate. PW-3348, Engineering News-Record.

Graduate engineer 18 yrs. exp. in heavy industrial design and construction, last 10 yrs. in executive capacity, desires position as Project Manager, preferably Latin America. Fluent Spanish. PW-3346, Engineering News-Record.

Bridge-Structural Engineer-Designer, experienced, 15 years practice, certain in Stress-Analysis and Theories of Structure, available January. PW-3340, Engineering News-Record.

Reinforcing Steel Estimator-Detailer, twelve years. Three years supervisory. To locate West or Southwest. PW-3397, Engineering News-Record.

Registered Engineer 20 yrs. experience, can assume immediate full charge all phases of water or sewer projects any size; U.S. or foreign. PW-3401, Engineering News-Record.

Construction engineer, 37, P.E., 17 yrs. experience. In full charge of small g.c. firm past 7 years.—bldg. construction, alterations, public work. Will be top-notch member of team—N. Y. area. PW-3398, Engineering News-Record.

Electrical Superintendent. Experienced in steam & hydro power stations, industrial plants, substations, transmission lines engineering background. PW-3399, Engineering News-Record.

Contracting Firm wants graduate engineers to work in Rocky Mountain area, must have previous construction experience. P-3318, Engineering News-Record.

Executive, 15 yrs legal-construction work, experienced administrator, government contracts, trouble-shooter, employed, will travel. PW-3355, Engineering News-Record.

Electrical Engineer, BEE. Reg PE, 37, 14 years diversified experience in industrial power and control, power distribution, and petroleum-electric fields. Will complete fourth foreign contract in March. Speaks French, Spanish. Seeks position with engineering-construction firm. PW-3352, Engineering News-Record.

Superintendent, Project Mgr., Proj. Engineer, age 48, heavy constr., water works, dams, refineries, grad. registered engineer, US citizen, speaks French, Spanish, German, Dutch, prefers foreign assignment. T. deFruyn, Rte. 1, Box 246-A, Las Vegas, Nevada.

Wanted: Employer in heavy construction civil eng., age 29, married, ambitious industrious very anxious to learn. PW-3316, Engineering News-Record.

Executive: Project management, Contract Negotiations & Administration, Claims. 23 yrs. exp. bridges, waterfront, highways, earthwork, etc. U. S. & O. S. PW-3380, Engineering News-Record.

Eng., 38, Estimate, Bid, Field Supervision and layout on sewer, drainage, waterline, concrete & earthwork projects, available S.W. N.E. or Mid-West—Reply 4905 Quitman, El Paso, Texas.

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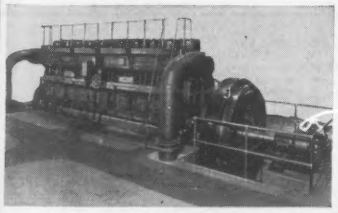

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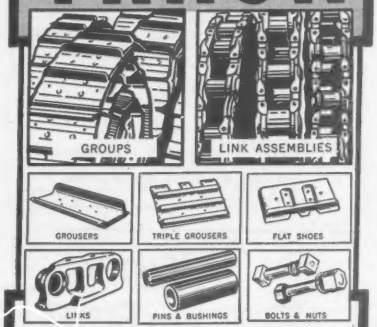

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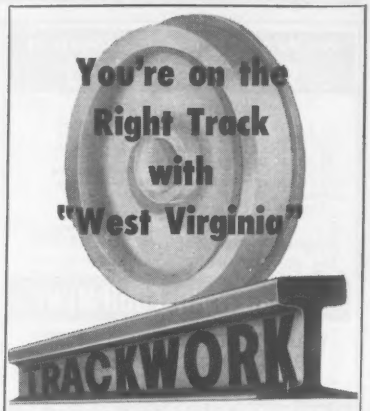

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Continued from page 73

Bids: March 20, 1960

Construction of Port of Um Qasr Near Basrah

REPUBLIC OF IRAQ
IRAQI PORTS ADMINISTRATION

1. Tenders are invited by the Iraqi Ports Administration for the construction of three berths at Um Qasr and Works in conection therewith.
2. The Contract documents and Instructions to Persons Tendering for these Works may be inspected on or after the 21st day of December 1959, at any of the following places:—
   a) The offices of the Ports Administration at Basrah, Iraq.
   b) The offices of the Ministry of Communications, Baghdad, Iraq.
   c) The offices of the Consulting Engineers, Messrs. Coode and Partners, Abbey House, 2/8 Victoria Street, London, S.W.1, England.
   d) The offices of Messrs. Coode, Binnie and Preece, 35/36 Roxborough Apartments, Laurier Avenue W, Ottawa 4, Ontario, Canada.
   e) The Embassies of the Iraqi Republic in London, Bonn, Washington, New Delhi, Brussels and Moscow.
   f) The Consulates of the Iraqi Republic in Bombay, New York, Geneva and Stockholm.
   g) The Legations of the Iraqi Republic in Rome and Vienna.
3. Firms desiring to tender may obtain four copies of the Contract Document and one set of the drawings between the 21st day of December 1959 and the 20th day of February 1960 from either the Director General, Iraqi Ports Administration, Basrah, or the Ministry of Communications, Baghdad, or from the Consulting Engineers, Messrs. Coode and Partners in London, upon payment of ID.50 (Iraqi Dinars Fifty) or £50 (Fifty pounds Sterling) for each set of documents, which will not be returnable.
4. Tenders must be accompanied by a deposit of 7% for the first ID.1,000 of the estimated cost and 5% of the remainder of the estimated cost, to be made at the Central Bank, Baghdad or Basrah. Full detailed conditions as to this deposit may be ascertained from "Instructions to Persons Tendering" attached to the Contract Documents.
5. Tenders for these Works must be submitted to the IRAQI PORTS ADMINISTRATION (BASRAH, and will be received up to noon on the 20th day of March 1960.
6. Particular attention is drawn to Article 22 of the Instructions to Persons Tendering, namely, that tenders will only be accepted from firms of contractors who have previously executed works of a similar nature and magnitude.

DIRECTOR GENERAL,
IRAQI PORTS ADMINISTRATION,
BASRAH.

OFFICIAL PROPOSALS

Bids: January 14, 1960

Feeder Road Program

MINISTRY OF PUBLIC WORKS
REPUBLIC OF EL SALVADOR
BIDS: JANUARY 14, 1960
NOTICE TO CONTRACTORS

The Ministry of Public Works of the Republic of El Salvador advises that on January 14, 1960, bids will be received for the construction of a major portion of the proposed Feeder Road Program of the country. The Specifications, Plans and Contract Documents will be for sale in El Salvador on December 9, 1959.

All Contractors interested in taking part in this bidding are requested to obtain the necessary Documents, Plans and Specifications from the Office of the Proveedor Especifico de Obras Publicas, Edificio Morazan, 8a C. P., San Salvador, El Salvador, C. A. All requests must be accompanied by a certified check in the amount of One Hundred Sixty Dollars which will not be returned.

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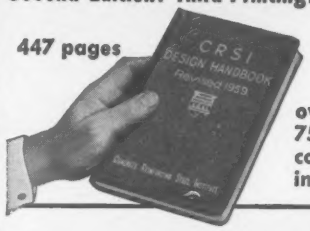

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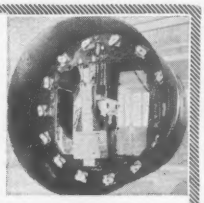

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Public Works No Panacea

GOVERNOR ROCKEFELLER has asked the New York legislature to strengthen the role for public works construction in a recession (see p. 62). He would create a reservoir of planned projects that could be tapped to stimulate the state's economy. And he would repeal the state law that ties all bond issues to specific projects so that the proceeds of some such issues could be used as freely as necessary "to maintain a constant or increased level of public works activity."

Constructive results can come from implementation of these requests, but only on the assumption that the governor and the legislature do not subscribe to the nonsense that public works can be used to offset declines in the whole economy—or even that they can effect a quick turn-around of declining construction activity itself.

The limited value of public works construction as a depression reliever is plain when one notes that this type of work constitutes only one-third of total construction, private projects making up the rest. And since total construction accounts for less than 15% of the gross national product, public works by itself is only 5%. Thus even if public works were to be doubled, their contribution to business revival could in no way be decisive.

The best that public works can do in a recession is to take up some of the slack caused by a drop in private construction. Even here, experience has shown that this desirable goal is hard to achieve because of the difficulty of scheduling public works so that the projects will be at a stage to make a maximum contribution at the right time.

In short, public works construction is not something that can be turned on and off at will. Nor should it be if it could.

Public works is a basic part of the fabric of a growing economy. It is thus needed at every stage of the business cycle, and probably more rather than less when business is booming, since much of it is complementary to private construction.

What is possibly of even greater significance is that the public plant, like any other, wears out and requires replacement. This fact alone requires a continuing high level of public works construction.

To attempt to defer public works until a recession is imminent would, therefore, constitute gross neglect, slow the economy and perhaps even speed the recession that the projects were planned to soften. In addition to these disadvantages, the administrative and judicial difficulties involved in selecting projects to be postponed and then suddenly deciding which of them to initiate are formidable, to say the least.

A continuous high level of public works activity is what benefits the country most. Obviously such work should not be reduced when a recession looms, and Governor Rockefeller properly emphasizes this by urging procedures that will "maintain a constant or increased level of public works activity." He also is on sound ground in urging more advance planning of public works projects. Bigger reservoirs of designed projects, reasonably ready to go, are badly needed to keep public works construction activity on a more even keel and at a high tempo at all times, regardless of the threat of recessions. If the reservoir is full enough when recession strikes to increase the tempo of public works construction, so much the better.

The crux of the matter is that public works are no panacea for a depression. There can be no quarrel with advanced planning in design and in financing procedures, but the work should be undertaken with the full realization that no amount of public works can lift the whole economy, and that at best such work can offset some of the decline in private construction.

Being overambitious in the use of public works can only result in waste and disappointment. It would be much better to look for ways to stimulate the large segment represented by private construction than to attempt a huge expansion of the smaller public works segment. All too often, too, such expansion discourages the resumption of private work just when it is needed most.

Round Trips to Russia

IT IS GOOD NEWS that a formal agreement has been signed with Russia for exchange visits of U. S. and Soviet construction experts. Each of the exchanges that have taken place previously has had to be preceded by such prolonged bargaining that many groups in both countries, who would benefit from exchange visits, have been discouraged from trying to arrange them. With the principle—now established on a high government level—that the cultural exchange program should include construction, the situation should change for the better.

Reports from Washington indicate that the Russians are most interested in highway construction and in mechanization as applied to all types of construction. A cable from ENR's Moscow Bureau, however, adds tunneling, industrial buildings and cement production as objects of Soviet interest in the U.S. No mention is made of dam construction, but since this is a prime field of interest so far as the U.S. is concerned, our arrangers should insist on its inclusion.

Now that the principle of exchange construction visits has been formalized, no time should be lost in scheduling the round trips. Moreover, what is learned should be widely publicized to the end that construction everywhere will benefit.

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